# TEXTILE WORLD

DECEMBER, 1960
PRICE $1.00

A McGRAW-HILL PUBLICATION

## YOUR EMPLOYEES' ATTITUDES

How to Find Out About Them—And What to Do page 32

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## YOUR 1961 FIBER-BLEND CHART

What Blends Are Here Today—and Just Ahead page 39

# Plant addition stabilizes weaving mill for Dundee

Dundee
MADE IN U.S.A. SINCE 1888

*Severe vibration set up by high speed looms threatened to destroy building at left. New structure at right served as buttress to steady original mill and also provided valuable addition to Dundee's production area.*

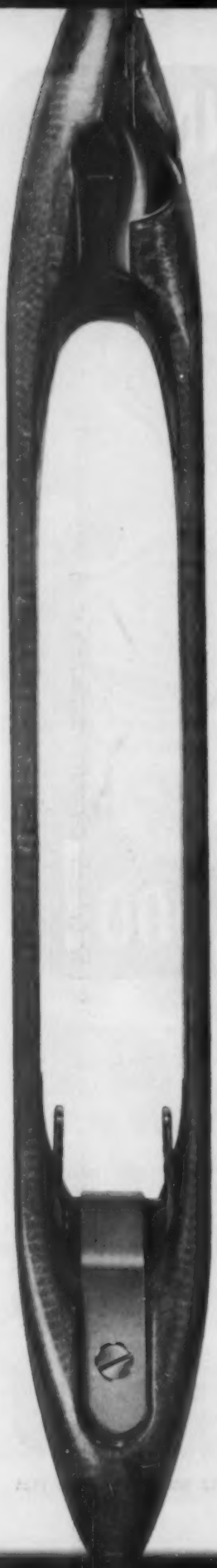
*Interior view showing looms in original building on right of floor plate and additional looms in new building at left. Original weave room wall was removed so that operations between the two buildings may be completely integrated.*

Dundee Mills, producers of fine textiles since 1888, called in Robert & Company Associates when severe vibration was causing serious deterioration of the weaving building at their #1 mill in Griffin, Georgia.

After a thorough study of the problem, Robert & Company engineers designed a "buttress" in the form of a two story addition with strength to spare. This modern two story building not only gave new life to the older 60,000 sq. ft. building by reducing vibration, but also provided Dundee with a valuable addition to their production area.

Perhaps your mill can profit from Robert & Company's 42 years experience in working with the leading names in textiles.

ROBERT AND COMPANY ASSOCIATES
Textile Engineering Division
ATLANTA



# A new record for shuttle life

*Draper Tru-Mold Shuttle Establishes Four Year Record at Clinton Cotton Mills*

We are justly proud that a Draper Tru-Mold Shuttle established this remarkable record.

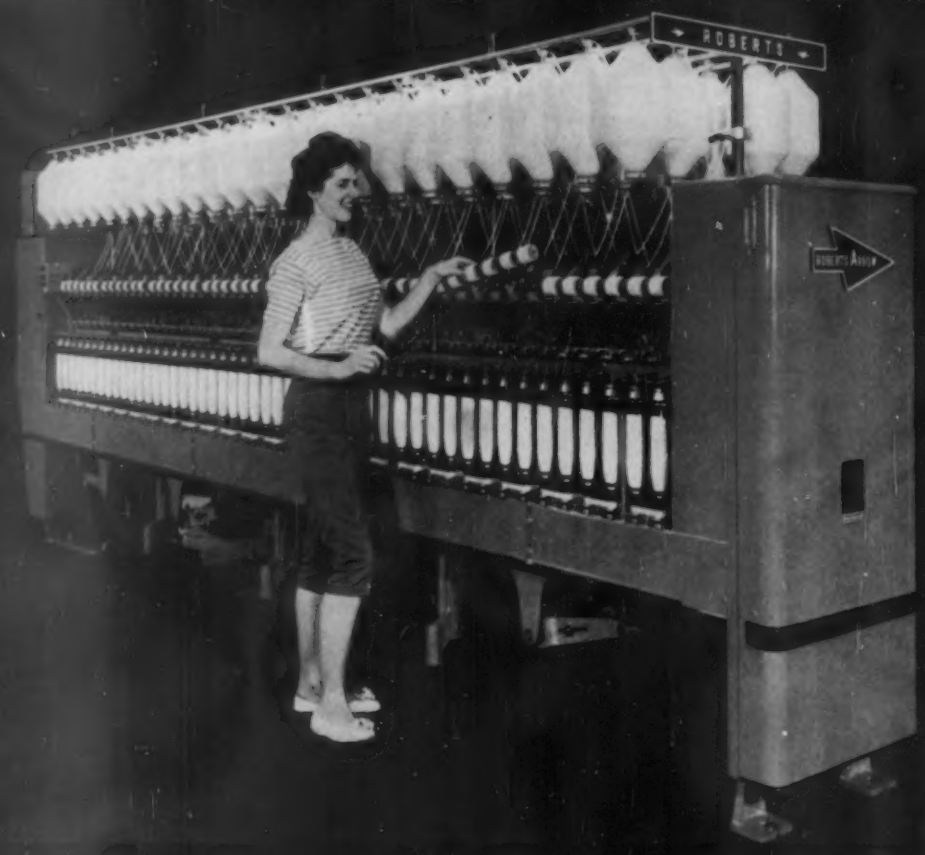
The use of superior materials and new manufacturing methods make such shuttle life possible.

For better performance, greater shuttle economy, equip your weave room with Draper Tru-Mold Shuttles.

**DRAPER CORPORATION**

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N.C. • SPARTANBURG, S.C.

# ROBERTS ARROW SPINNING




# Spindle Speeds Over 13,000!

One of the most frequent questions asked today concerns high spindle speeds. The answer comes from many of the 850 Roberts Arrow Spinning Frames running in leading mills since 1956. Three examples are shown at the right.

The new and refined Arrow compares advantageously with all other all-ball-bearing frames and greatly outperforms all conventional and standard-type spinning frames. The Arrow offers the greatest dollar-for-dollar-value against any other make of frame in dependable performance, lowest initial cost, and maintenance-free operation.

Arrow Spinning is available for either the cotton or the worsted system for natural or man-made fibers or blends.

**3 MILLS RUNNING ARROW FRAMES AT 12,300 to 13,200 R.P.M.**

- **A major sheet manufacturer runs 36's warp yarn with 2" ring at 12,300 r.p.m. spindle speed on 44 Arrow frames.**
- **A major manufacturer of Dacron-cotton fabrics runs 50's on 66 Arrow frames with a 1-7/8" ring at 13,200 r.p.m. spindle speed.**
- **A major broadcloth manufacturer using 96 Arrow frames makes 40's with a 1-13/16" ring at 12,800 r.p.m. spindle speed.**

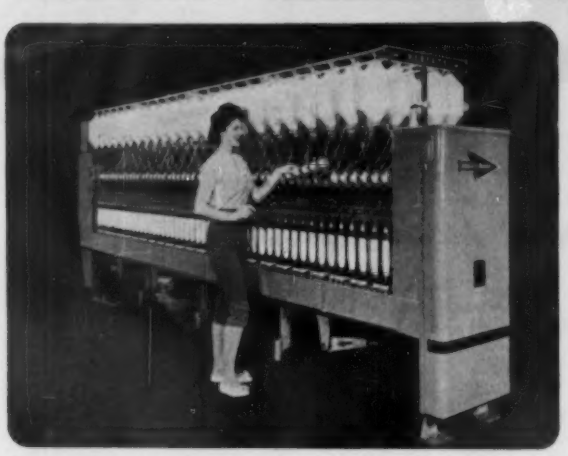
**ROBERTS COMPANY**

SANFORD, NORTH CAROLINA

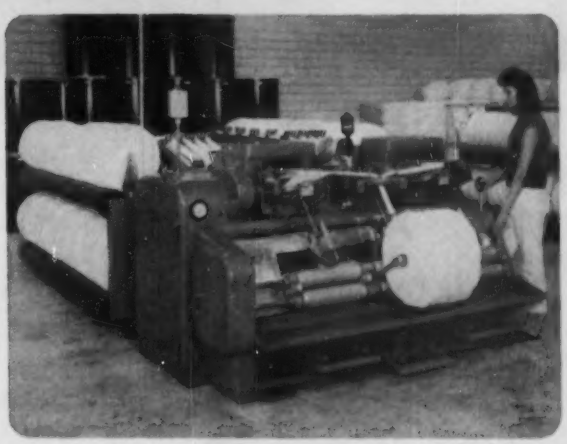
YARN MAKING MACHINERY

# ROBERTS NEWS

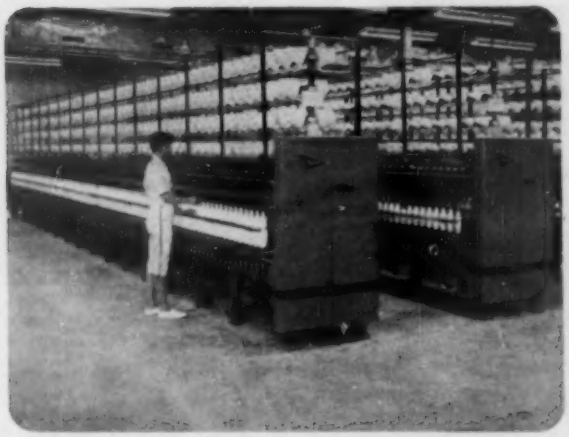
COTTON, WORSTED OR LONG FIBER SYSTEMS



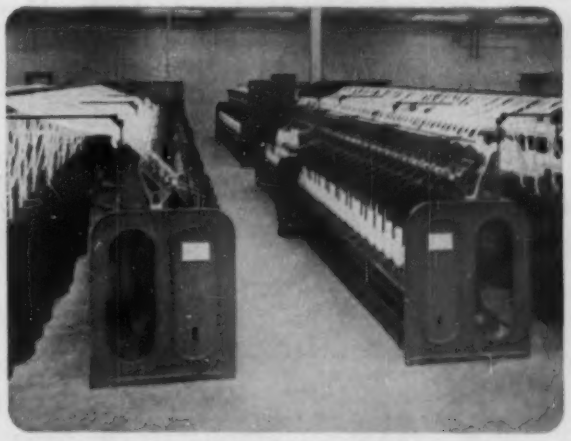
**ROBERTS ARROW SPINNING** for both cotton system and long fiber system yarn spinning for natural and synthetic fibers and blends. High speed, all ball bearing, big package Arrow Spinning Frames in 25-inch or 36-inch width. Exceptional flexibility and simplicity of operation in the manufacture of improved quality yarns at reduced costs and modest initial investment.



**ROBERTS-TEMATEX** worsted system preparatory machines, including ParaBlenders, ParaDrafters and AutoEveners, are rugged, high performance machines for pinning, parallelizing, drafting and blending worsted and synthetic fibers prior to roving and spinning, and in top making plants. AutoEvener automatically and instantaneously corrects delivered sliver weight to within plus or minus 1%.



**ROBERTS TWISTERS** for plying yarns are completely ball bearing equipped and designed for high speed ring twisting operations. 25- or 36-inch frames. Up to 3½-inch rings and 12-inch bobbins. Package weights 1¼ pounds on cotton, ¾ to 1 pound on worsted.



**ROBERTS ROVING FRAMES** are ball bearing rebuilt and feature all-new heavy duty ball bearing Roberts Double Apron Drafting Systems for cotton, short staple or long fiber synthetics, worsted and blends. 10x5 and 12x7 packages. Provisions for double headed spools.

**Simplicity of design, rugged construction and high speed ball bearing operation are the trade marks of all Roberts Company machinery. Roberts also supplies rebuilt spinning frames and modernization change-overs for mills' existing machinery.**

**ROBERTS COMPANY**

SANFORD, NORTH CAROLINA



CIRCLE 3 ON READER SERVICE CARD 

# TEXTILE WORLD

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William A. Newell
Leopold Licht

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N. S. Knowlton

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## Attitudes, Ideas, Electrical Power, Dye . . .

. . . may not sound as if they go together, but each plays an important role in modern management in today's textile mills. Take 'em one by one:

**1. Attitudes** . . . employee attitudes, like those you'll read about starting on page 32, can make or break you as a manager. The handsome photos you see on our cover and illustrating the article itself, by the way, show the good effects of healthy management-employee attitudes at Dan River Mills (Danville, Va.), where the photos were taken.

**2. Ideas** . . . that you may not see in your normal monthly technical reading are now set forth in easy-to-read format for you each month. It's a new TEXTILE WORLD feature. It's called "Management Bulletin." This month it makes its first appearance—on page 27.

**3. Electric Power** . . . that's the subject of a major TEXTILE WORLD survey you'll be seeing in January's issue. We've got the last word on electrical practices and procedures in today's mills. You can use this survey to plan your own modernization, compare your progress with that of other mills, or cut costs by building new versatility into your mill.

**4. Dye** . . . reactive dye—that's the subject of a forthcoming roundup of the structure, properties, and application methods of all kinds of reactive dyes. Watch for this important technical report in an early issue of TEXTILE WORLD.

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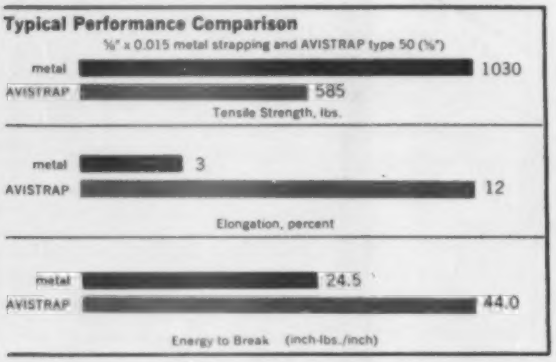
# NEW TOUGHNESS

**It actually takes more energy** to break AVISTRAP cord strapping than to break comparable-width metal strapping. Though metal has greater tensile strength, AVISTRAP—made of high-tenacity Avisco® rayon—has greater "working toughness." Strapping must either extend enough to absorb shock-energy or fail. Metal strap has far less elongation before breaking than AVISTRAP. As a result, AVISTRAP is still stretching, soaking up energy, and holding the package together after a metal strap would have stretched to its breaking point and failed.



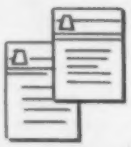

**Vital statistics.** This comparison is the result of careful laboratory tests, using an Instron Tensile Testing Machine. In tests covering metal strapping from ¼" through ¾" width and from 0.012 through 0.023 thickness—AVISTRAP outperformed metal in terms of energy to break in every instance.

**Toughness pays off here.** AVISTRAP can be tightly tensioned without danger of sudden breaks, will not lash out with jagged ends. Strap breakage during handling and shipping is reduced. Other advantages: no sharp edges, light weight, easy handling, easy unpacking.

# AVISTRAP* CORD STRAPPING

**Economy • Local Service • Easy Handling • Reduced Damage • Safety**

*Trademark of American Viscose Corporation, Patents Pending.



Write for technical bulletin #4, covering AVISTRAP cord strapping strength tests. Include any other specific technical questions you may have. If you wish, arrangements can be made to demonstrate AVISTRAP cord strapping in your plant. AVISTRAP cord strapping, tools, accessories and application services are now available in all major U.S. industrial areas, through authorized local distributors. AVISTRAP district offices are listed below.

**AMERICAN VISCOSE CORPORATION,** INDUSTRIAL PACKAGING DEPT., 1617 PENNSYLVANIA BLVD., PHILA. 3, PA.

District offices: Atlanta, Ga., Boston, Mass., Charlotte, N.C., Chicago, Ill., Columbus, Ohio, Dallas, Tex., Denver, Colo., Los Angeles, Calif., New Orleans, La., New York, N.Y.

# For quality fabrics—four quality latices!

**New fibers—new fabrics**—new selling features—are spinning out of the textile industry at a record rate. As a constantly increasing number of fabrics are being produced, manufacturers are becoming more and more selective about latices. Quality is vital. And the latex chosen must be *exactly right* for the job.

**To meet this need,** Goodyear offers four basic latices: PLIOLITE LATEX in two forms (as a rubber or resin dispersion), PLIOVIC LATEX (dispersion of vinyl copolymer resin) and CHEMIGUM LATEX (dispersion of nitrile rubber). They are available in a broad range of monomer ratios, particle sizes and types of stabilization. They can be used alone – or in combination with each other – or as modifiers of your present materials.

**Among the benefits** you can expect from these latices: better body, drape, strength and dimensional stability –improved flexibility and softness–exceptional resistance to aging – and outstanding wear qualities.

**You can also expect** the finest in technical assistance when you work with a Goodyear latex. Contact your Goodyear Chemical Division Representative for all the facts. Or write for details–including latest *Tech Book Bulletins*–to Goodyear, Chemical Division, Dept. X-9433, Akron 16, Ohio.

GOODYEAR

CHEMICAL DIVISION

Chemigum, Pliolite, Pliovic–T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

# Now...keep your work areas clean automatically, with specially designed Amco Cleaners!

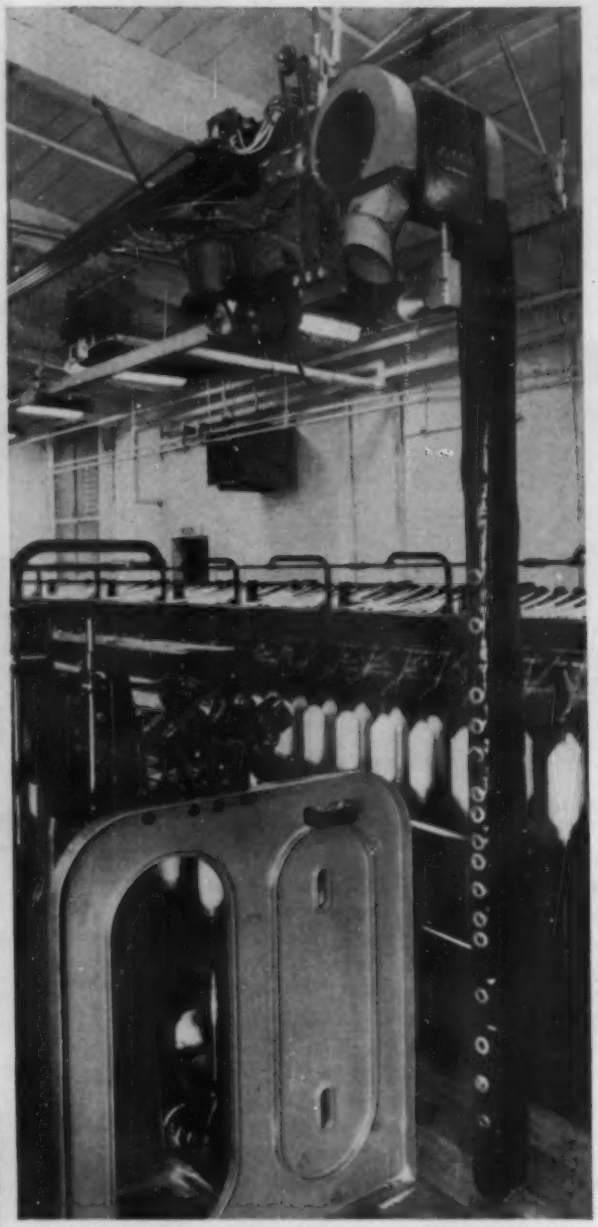
Amco has developed a wide selection of automatic cleaning equipment . . . designed to cut down manual cleaning, improve quality, and step up mill production.

For money-saving facts about Amco Cleaners, call American Moistening Company — an organization with more than 70 years' experience serving the textile field.

Helicone Loom Cleaners improve quality of fabrics by preventing waste accumulation on stop motions, drop wires, harnesses and reed caps.

Amco Loom Cleaners over Draper shuttleless looms. Sheeting is being woven at high relative humidity.

Amco Ceiling Cleaner provides automatic cleaning of ceiling, beams, walls and other surfaces. Excellent for card room areas.



Amco's electronically controlled Roving Frame and Ceiling Cleaner. Air delivery boot takes care of specific lint-collecting trouble spots.

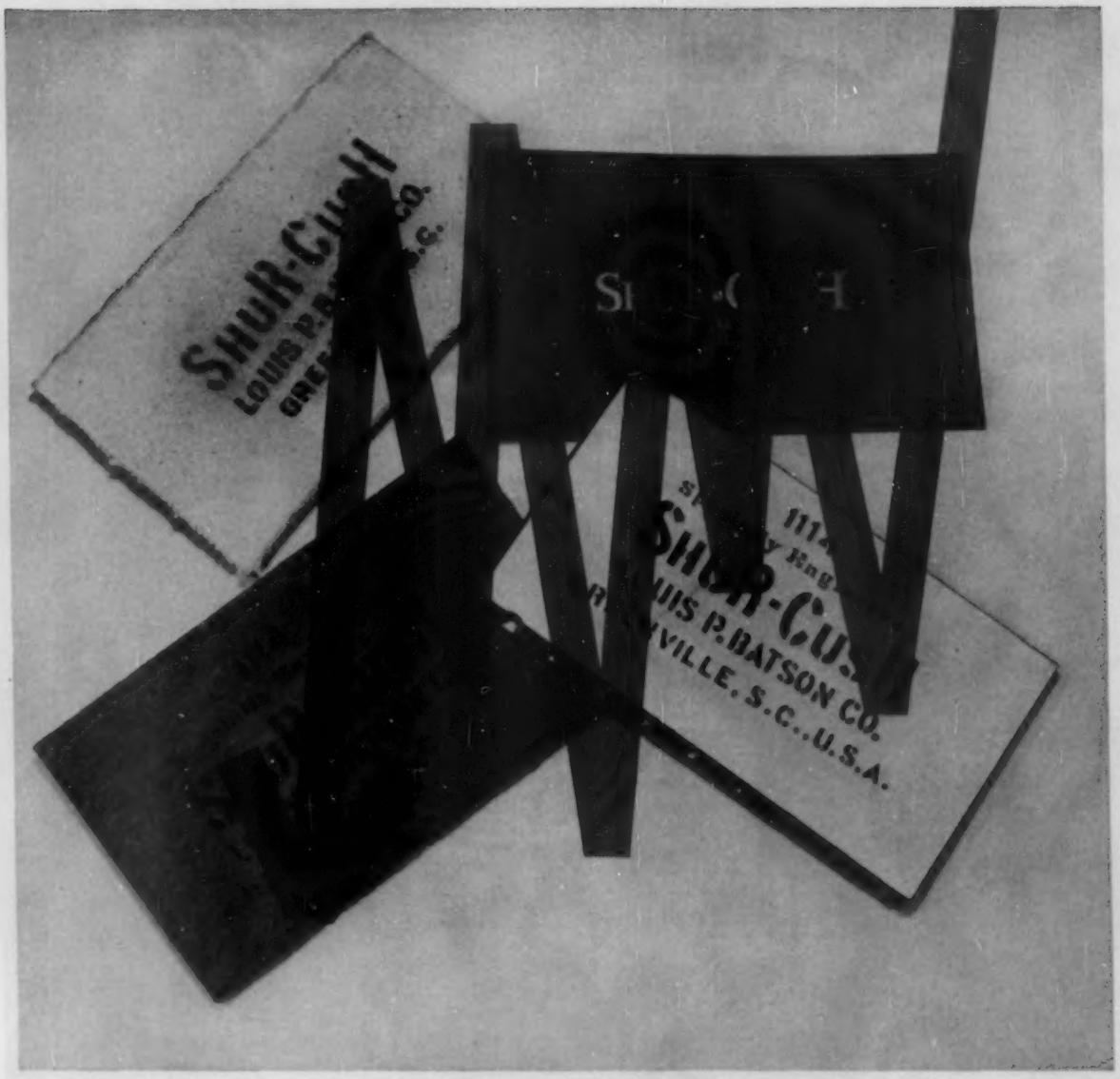
AMCO

SINCE 1888

**Air Conditioning Equipment — Textile Specialties**

American Moistening Company, Cleveland, North Carolina

Branches: Atlanta, Ga., Providence, R. I., Toronto, Ont.




## HERE'S WHY YOU SHOULD ALWAYS SPECIFY BATSON'S SHUR-CUSH PRECOATED OR PLAIN FOR ALL VIBRATION ABSORPTION:

1. Complete quality range . . . from the cheapest that's good to the best that's made. Quality mountings are re-usable when machine is re-located.
2. Complete thickness range . . . from 1/32" to 2".
3. Complete density range.
4. Complete size range. Batson's complete cutting facilities mean you can order: cut-to-size, odd sizes and shapes, rolls, sheets, strips.
5. ShuR-CusH available precoated or plain.

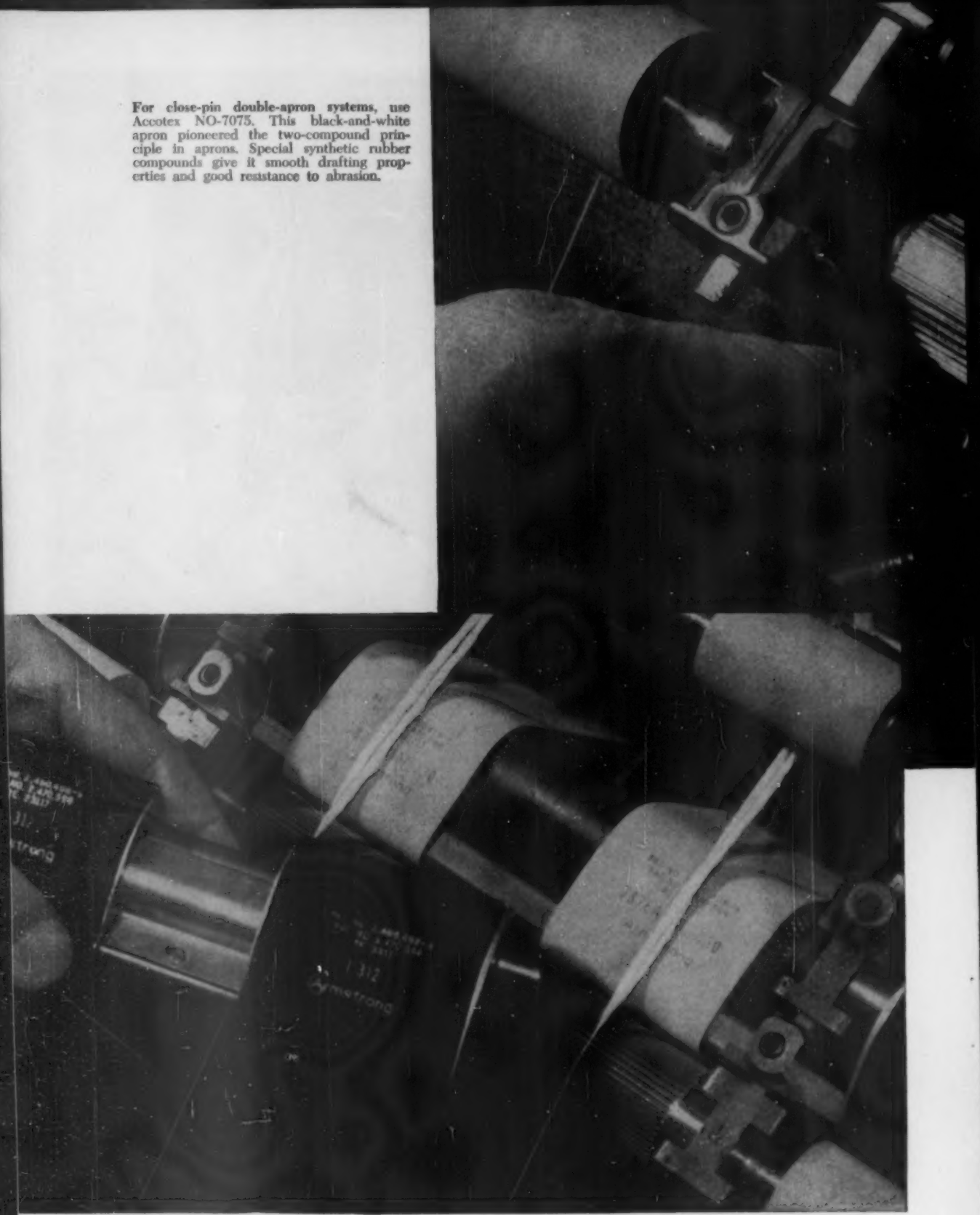
   Apply precoated with its own pressure-sensitive adhesive on both sides.

   Apply plain ShuR-CusH with Batson's ShuR-CusH Adhesive. Maintains bond and actually improves with age because it contains no asphalt derivative to harden and reduce absorbability of mounting.
6. Prompt delivery. Batson always has a complete range of ShuR-CusH in stock ready to rush to you promptly when you need it!

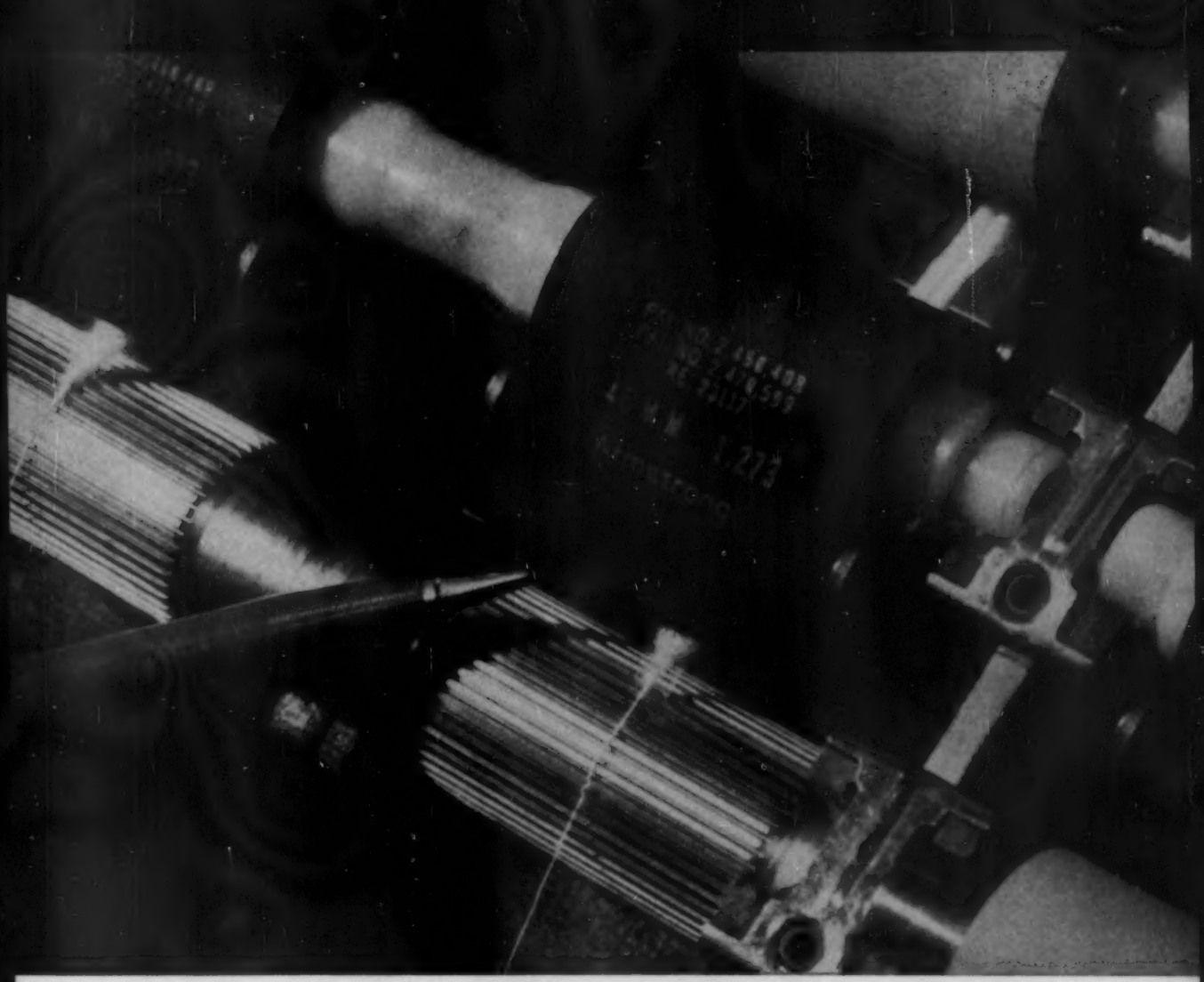
Louis P. Batson Company

P.O. Box 772, Greenville, S.C.

**For close-pin double-apron systems, use** Accotex NO-7075. This black-and-white apron pioneered the two-compound principle in aprons. Special synthetic rubber compounds give it smooth drafting properties and good resistance to abrasion.



**For long-apron systems,** Armstrong Accotex NO-7878 is recommended. Two special rubber compounds give it super-flexibility, superior fiber-handling characteristics, and unusual resistance to flex cracking and ozone.



# Whatever your fiber or spinning system, an Accotex apron gives you quality yarn

Whether you use a close-pin double-apron system or a long apron system, there's an Armstrong Accotex Apron specially designed to give you long service and superior yarn control.

Every Accotex Apron is built with Armstrong's patented three-layer construction. The underside is a synthetic rubber compound with just the right frictional qualities to assure smooth drafting action and accurate tracking. The compound of the outer layer has superior fiber-handling characteristics to give strong, uniform yarn with any fiber or blend.

The center layer—a strong cord interliner—assures dimensional stability through years of spinning. These aprons can't stretch or curl. Yet they have the flexibility required for smooth performance.

Armstrong will be glad to arrange a test installation of Accotex Aprons in your own mill. Contact your Armstrong man or write Armstrong Cork Company, Industrial Division, 6412 Dauphin St., Lancaster, Penna.

**Armstrong ACCOTEX APRONS**

*1860–1960 Beginning our second century of progress*

CIRCLE 11 ON READER SERVICE CARD

## The Whitin Model M Card

- New Automatic Card Feed
- New Tape Condenser
- Variable Speed Fancy Drive
- ATF Variable Speed and V Belt Drive for Feed Table
- V Belt Drive for Strippers, Breast, Doffer, Fancy and Condenser
- Antifriction Bearings throughout
- P.I.V. Drives on Breaker Feed Rolls and Finisher Doffer

# *A "Natural Combination"* for greater profit

The new Model M Card and the famous FLEX-SPIN Model L2 Wool Spinning Frame are two new "stars" for your production team. The Model M Card in either 60" — 72" or 84" widths has tremendous productive capacity. The FLEX-SPIN with its 16" traverse produces packages carrying up to 20 oz. of soft knitting yarn or up to 32 oz., or even higher, on weaving yarns.

Together, these two great new machines form a feature-filled "natural combination" that's got what it takes — and just what you need — not only to *boost* your production and *maintain* quality, but also to *cut* your operational costs through improved machine efficiency and work simplification.

## Whitin Flex-Spin® "L2" Wool Spinning Frame

- Reciprocating Ring and Spindle Rails
- Balloon Control Rings
- Traverses up to 16"
- Simplified Spindle Drive
- Side Shaft Twister Head Drive
- New Antifriction Spindle and Hand Brake
- Variable Speed Drum Drive
- Pneumatic Waste Removal*
- Automatic Lubrication*
- Vari-Speed Drive*

*Optional Equipment

*For complete information ask your Whitin representative or write direct to us.*

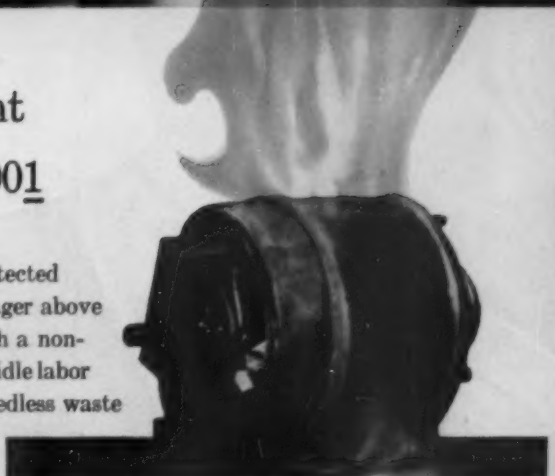
# WHITIN MACHINE WORKS

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

## The man who bought equipment powered by motor No. 200,000,001

Our figures tell us that approximately 200,000,000 motors are protected from burnouts with KLIXON Protectors. Anyone, as the plant manager above learned to his sorrow, who buys a piece of equipment powered with a non-protected motor takes a needless risk of costly machine downtime or idle labor time caused by motor burnout due to overheating. It is such a needless waste of operating profits. Motors with built-in KLIXON Protectors cost but little more. They are available for 3-phase or single-phase operation from your motor supplier. Specify them on all your electric-powered machinery. Write for Bulletin SP-25.



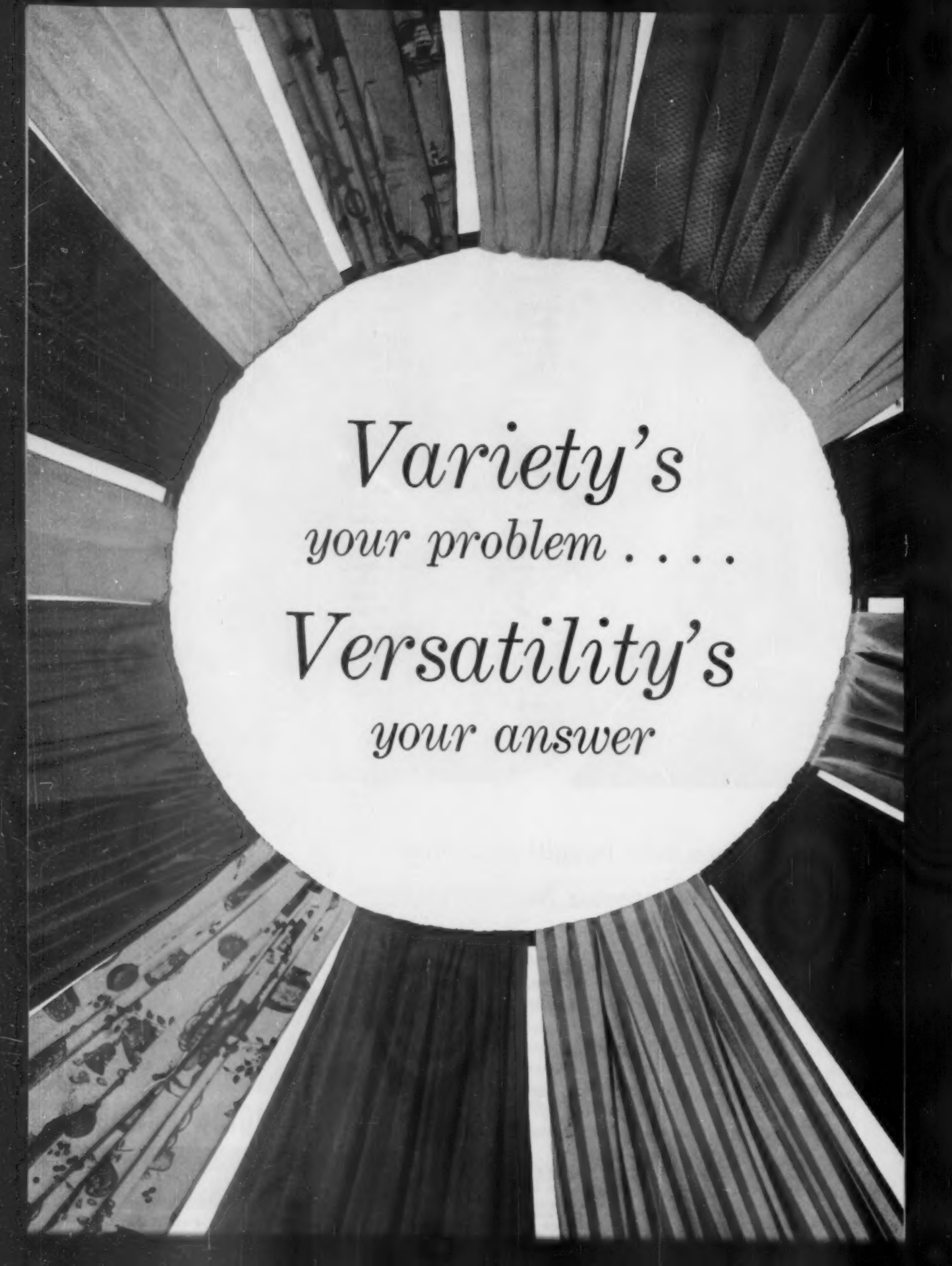
**PREVENT MOTOR BURNOUTS**

**SPECIFY KLIXON PROTECTORS**

**ON SINGLE- AND 3-PHASE MOTORS**

TEXAS INSTRUMENTS
INCORPORATED
METALS & CONTROLS DIVISION
5512 FOREST STREET • ATTLEBORO, MASS.

CIRCLE 13 ON READER SERVICE CARD


Variety's
your problem . . . .
Versatility's
your answer

Today's changing modes of fabric consumption demand a high degree of weave room versatility. UNIFIL® Loom Winders are bringing this advantage to many modern mills.

With UNIFIL Loom Winders the weave room becomes completely market oriented, because a wide variety of filling yarns may be used; natural and man made; spun filament and textured. The single shuttle weave room can switch filling yarn from one count to another, from one fabric to another as quickly as fashion dictates — *and at no extra cost.*

In addition to minimizing the caprice of style as a production factor, UNIFIL Loom Winders drastically reduce inventory and production planning, work scheduling and employee training. This is accomplished by the elimination of several operations.

UNIFIL's unmatched versatility meets today's needs and tomorrow's markets. It allows mills to wind from any filling supply *economically.* Quills are wound and shuttles loaded, empty quills stripped and returned for rewinding — *all automatically at the loom!*

The UNIFIL story is one of versatility and economy. It clearly indicates why leading textile mills consistently reorder UNIFIL Loom Winders. Call your nearest Leesona Sales Engineer — in Boston, Philadelphia, Charlotte, Atlanta or Los Angeles. Or write LEESONA CORPORATION, P. O. Box 1605, Providence 1, Rhode Island. Keep pace with your market with UNIFIL.

*Some of the many modern mills*
*that are meeting today's challenges with*
**UNIFIL** *Loom Winders*

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AMEROTRON COMPANY
ARCO MILLS
BEAUNIT MILLS, INC.
BERKSHIRE HATHAWAY, INC.
BLANCHE COTTON MILLS
BOONTEX FABRICS
BURLINGTON INDUSTRIES, INC.
CANADIAN CELANESE, LTD.
CANNON MILLS CO.
CARTHAGE FABRICS CORP.
CONE MILLS CORP.
CONSOLIDATED TEXTILES
DOVER MILL group
DRAYTON MILLS
EXPOSITION COTTON MILLS CO.
GALLANT MFG. CO.
GLEN RAVEN SILK MILLS
GREENWOOD MILLS
JUDSON MILLS
KEYSTONE WEAVING MILLS
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RICHARD TEXTILES
RIVERSIDE MILLS, INC.
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WILLIAM SKINNER & SONS
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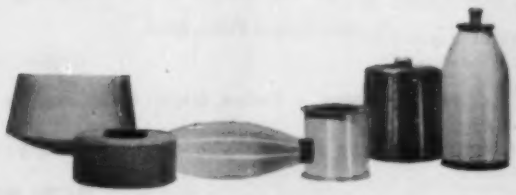

23.0.35

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## S-W ROLL EXPERIENCE

*that brings improved processing with new products like*

## SEALSKIN® Slasher Rolls

which outlast other covers by 100% in most cases, which are reported to last up to 25% longer between grindings, which are described in the S-W "Sealskin" Bulletin.

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*"How to Get Longer Life from a Rubber Covered Roll" — will be sent to you upon request.*

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dyed with National Fast Brilliant Crimson RB
Designed by
*Peggy Thayer*
for House of Jamison Inc.

# Gauguin Pink

***inspired by an exclusive new dye...***
***National® Fast Brilliant Crimson RB***

For bright, clear shades of pink to deep carmine on wool, silk and wool-nylon unions, your best buy is this new acid type made only by National Aniline.

Applied in a weak-to-strong acid bath, National Fast Brilliant Crimson RB has exceptional tinctorial strength, good light resistance and better-than-average wet fastness. You will find this versatile dyestuff extremely useful for suitings, dress goods and carpet yarns.

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Index of Textile-Manufacturing Activity
(Man-hours worked, adjusted for changes in productivity. 1954=100)
1957
Jan. 108
Feb. 108
Mar. 107
Apr. 107
May 106
June 107
November Estimate
113
Source: McGraw-Hill Economics Department.
124 122 120 118 116 114 112 110 108 106 104 102 100 98 96 94
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1957
1958
1959
1960

# Summing Up: A Good Year

The year 1960 has been a good—though not a record—year for the textile industry. Sales of fabrics to the auto industry have been excellent, and apparel sales have been satisfactory. One dark spot—home-furnishings sales.

The big question now being asked by textile people is, "Who will be our best customers next year?" Here are the answers as they look now:

•

Apparel sales are unlikely to show a large amount of change, but the general trend of sales should be up, making 1961 as a whole much like 1960.

Sales of textiles for home furnishings seem to be headed up next year. Housing starts should turn up as we move into 1961 and the continuing office-building boom will stimulate sales of fabrics for new furniture, draperies, and rugs.

But the textile industry's largest industrial consumer, the auto industry, will probably cut purchases of fabrics next year. Automobile dealers will start off 1961 with higher inventories of both 60's and 61's than they prefer to carry. As a result, sales of autos will be made partly from inventories in the early part of next year, and production will lag behind 1960's volume by about 13%. A lower production level for autos means lower fabric consumption by the industry.

## Figures of the Month

### TEXTILE-INDUSTRY INDICATORS

| | Latest Month | Previous Month | Year Ago |
|---|---|---|---|
| Textile World's Exclusive Index (chart above) | 112 | 112 | 119 |
| Employment (thousands)[1] | 934.4 | 943.1 | 978.5 |
| Production Workers (thousands)[1] | 840.8 | 849.5 | 885.3 |
| Weekly Earnings[1] | 63.41 | 62.05 | 64.40 |
| Hourly Earnings[1] | 1.63 | 1.62 | 1.59 |
| Weekly Hours Worked[1] | 38.9 | 38.3 | 40.5 |
| Production Index (1957=100)[2] | 108 | 108 | 111 |
| Wholesale Price Index (1947-49=100)[3] | 93.8 | 93.9 | 95.9 |
| Manufacturers' Sales (million $)[4] | 1160* | 1200 | 1222 |
| Manufacturers' Inventories (million $)[4] | 2640* | 2670 | 2516 |
| Inventories-to-Sales Ratio | 2.26* | 2.23 | 2.05 |
| Exports (million $)[5] | 79.7* | 67.1 | 87.8 |
| Imports (million $)[5] | 100.9* | 125.9 | 106.4 |
| Stock Price Index (1941-43=10)[6] | 25.35 | 26.10 | 39.92 |
| Failures (number)[5] | 4 | 4 | 5 |

### NATIONAL ECONOMIC INDICATORS

| | | | |
|---|---|---|---|
| Industrial Production (1947-49=100)[2] | 162 | 162 | 155 |
| Consumer Price Index (1947-49=100)[1] | 126.9 | 126.8 | 125.5 |
| Wholesale Price Index (1947-49=100)[3] | 119.7 | 119.2 | 119.1 |
| Civilian Population (millions)[2] | 181.4 | 181.1 | 178.5 |
| Unemployment (millions)[2] | 3.6 | 3.4 | 3.3 |
| Employment (millions)[2] | 67.5 | 67.8 | 66.8 |
| Personal Income (billion $)[6] | 409.6 | 408.5 | 384.3 |

*September; otherwise latest month is October.

1. Bureau of Labor Statistics; 2. Federal Reserve Board; 3. Department of Commerce; 4. Standard & Poors; 5. Dun & Bradstreet; 6. Bureau of the Census.

# NEWS and COMMENT.....

EARNINGS REPORTS RELEASED IN NOVEMBER REVEAL ONE THING CLEARLY: SALES MAY (AND DO) DROP OFF, BUT SOME TEXTILE MANUFACTURERS HOLD THE LINE ON PROFITS AND OTHERS EVEN SHOW GOOD INCREASES. CREDIT THEIR ACHIEVEMENT TO TWO FACTORS: MANAGEMENT'S FIRM DECISION TO PROTECT PROFITS (see Textile World, October, pages 29 and 35), AND THE HEAVY INVESTMENT IN CAPITAL IMPROVEMENTS MADE BY THESE COMPANIES IN THE PAST FEW YEARS. HERE ARE SAMPLINGS:

. Erwin Mills--Net profit for the fiscal year ended Sept. 30 rose 29% to $2,093,613. Sales were down 9% to $63,911,599. Said President W. H. Ruffin: "Improved profits reflect continuation of the better prices we began to experience in the latter part of our 1959 fiscal year... Over recent months we have had a gradual market deterioration in the industry with a decline in volume of orders.... (This) has resulted in a decline in our sales from the previous year's record high, in which we not only sold our production but considerably lowered inventories."

. Dan River Mills--Net earnings for the nine months ended Oct. 1 were up about 30% to $5,216,807. Sales were down about 4% to $119,853,128. President W.J. Erwin predicted that sales in the fourth quarter this year will not reach last year's level but that operating results for the full year 1960 would be among the best in 10 years.

. Avondale Mills--Earnings for the year ended Aug. 1 were up 44% to $2,120,694. Sales were down about 2% to $60,725,578. President T. C. Smith said his firm had budgeted $8.5-million for capital improvements in the next two years. The company is now running fewer hours than last year, with unfilled orders 17% below those of the same period last year.

. M. Lowenstein & Sons--For the nine months ended Sept. 30 earnings were up 52% to $4,631,586. Sales were up 4.4% to $343,003,834. For the quarter ended Sept. 30 earnings were down nearly 33%, sales off 2.3%. Chairman Leon Lowenstein said: "Orders for future delivery are coming in very satisfactorily... Our unfilled order position today is comparable to what it was a year ago."

. Mt. Vernon Mills--For the first nine months of 1960 earnings were up 26% to $900,000, with sales down 16% to $28,766,000. For the quarter ended Sept. 30 earnings were up 35% to $300,000, sales down 23% to $8,801,000. President T. M. Bancroft says forward business is continuing spotty, with resultant reduction in the unfilled orders.

. Kayser-Roth Corp.--For the quarter ended Sept. 30 earnings were $944,320 ($932,724 a year ago) on sales of $26,753,751 ($26,911,667 a year ago).

. Berkshire Hathaway--For the year ended Oct. 1 profits were up three and a half times to $4,623,980 though sales were down 10% to $62,608,679.

. Riegel Textile Corp.--For the year ended Oct. 1 earnings were up 29.4% to $2,354,000 while sales declined 6.8% to $90,729,000.

MEANWHILE SOME TEXTILE MACHINERY AND EQUIPMENT COMPANIES REPORTED EARNINGS AS FOLLOWS:

. Crompton & Knowles--Net income for the latest nine-month period came to $1,724,000 on sales of $21,196,000 compared with $974,000 and $16,237,000 in the same period a year earlier.

. Saco-Lowell Shops--For the quarter ended Aug. 31 net income was $388,607, compared with $48,770 in the same quarter a year earlier. For the nine-month period the company showed earnings of $897,640 against a loss of $2,070,566 in the same period a year earlier.
. Lindly & Co.--For the nine months ended Sept. 30 earnings came to $14,245, compared with $5,800 for the entire year of 1959.

OVERSEAS, ACTIVITY AMONG TEXTILE AND TEXTILE-MACHINERY MANUFACTURERS MOVED ALONG AT A FAST CLIP.

. Australia--Construction has just begun on a $4-million cotton mill at Kotara, NSW. The mill will use over $2.2-million of Swiss textile machinery to spin fine cotton yarn for the first time in Australia, says Alicja Grobtuch, TEXTILE WORLD's Melbourne correspondent. Also, the Tariff Board is about to investigate the rate of imports of yarns and fabrics, following recent abolition of major import restrictions.
. Madrid--The Spanish government hopes to modernize and reorganize the textile industry through a voluntary association that will finance modernization through interest-bearing bonds, says Jim Morrison, one of TW's European correspondents. A committee of the association will coordinate the effort and will study the problem of workers displaced by mechanization. The government is encouraging the industry to export and is allocating a substantial part of foreign exchange to purchase of machinery from foreign sources.
. Tokyo--The Japanese textile machinery industry produced $159-million of equipment in the first half of 1960--up 60% above the same period in 1959, says Sol Sanders, TW's newsman in Tokyo. Textile-machinery exports totaled $28,300,000 in the first half of the year--up 83% over the same period a year ago. Just now the government is looking toward The Sudan, Pakistan, and Soviet Russia as possible markets.
. Lebanon--The United Arab Republic has shipped nearly $13-million of cotton yarn, cotton textiles, gasoline, rice, and onions to Castro's Cuba in the last 12 months, according to O. M. Marashian, TW's correspondent in Beirut. A year ago, Cuba-UAR trade was nearly nil.
. Bonn--German textile machinery builders will produce about $3-billion of machinery this year--up some $75-million above last year's figure, says TW's Jim Morrison, writing from Bonn. Something more than 68% of the total will be exported.

BRIEFS--The Department of State announced Nov. 3 that on Jan. 1, 1961 a new set of wool fabric tariffs will supplant the tariff quota that has controlled imports since 1956. The new system will slightly increase tariffs on high-priced wool fabrics and impose far heavier duties on cheaper goods . . . Freshman enrollment in the School of Textiles at North Carolina State College is 148 this year--100% above last year . . . L22 end-performance standards for textiles have been attacked by the Textile Fabrics Association (mostly converters) and the Association of Cotton Textile Merchants of New York. On the other hand, a panel of retail and manufacturer spokesmen stated their support for the standards at a meeting of the American Association for Textile Technology.

# WASHINGTON OUTLOOK . . . . .

Two of the outgoing administration's last import decisions involved textiles. President Eisenhower replaced the controversial tariff-quota schedules on wool fabrics with a straight tariff hike aimed principally at low-priced Japanese and Italian fabrics.

Tariffs were raised an average of 3% on the higher-priced goods, and 12% on cheaper items. The lower-priced goods will be subject to duties up to $1.13 1/2 a pound starting January 1, 1961.

Domestic mill spokesmen expressed satisfaction with the decision, but British textile industry leaders said that the new rates would hurt their U.S. sales more than Japanese sales.

The other administration decision came from Defense Mobilization Director Leo A. Hoegh, who ruled against import curbs on wool-knit gloves. The OCDM found that wool glove imports do not pose a threat to the domestic productive capacity that the U.S. would need in case of mobilization. The case came up last year under the National Security Provisions of the trade laws.

*

Domestic textile mills should benefit from President Eisenhower's balance of payment decrees, designed to stop the depletion of the U.S. gold supply. One part of the plan is "tieing" U.S. foreign economic aid to "buy American" policies. A "tied loan" under the foreign economic aid program doesn't mean that the U.S. will stop its aid to foreign textile producers. But more of the plants and equipment may have to come from the U.S.

Another part of the plan is the redirection of the government's off-shore procurement program under the International Cooperation Administration so that domestic suppliers will get a larger share of government procurement dollars.

It's too early to tell how much any specific U.S. industry will benefit, but the plan aims at saving as much as $300 million a year in U.S. off-shore I.C.A. procurement alone. The big question: How much of the saving will be made by buying U.S. products rather than foreign goods, and how much by spending cuts.

*

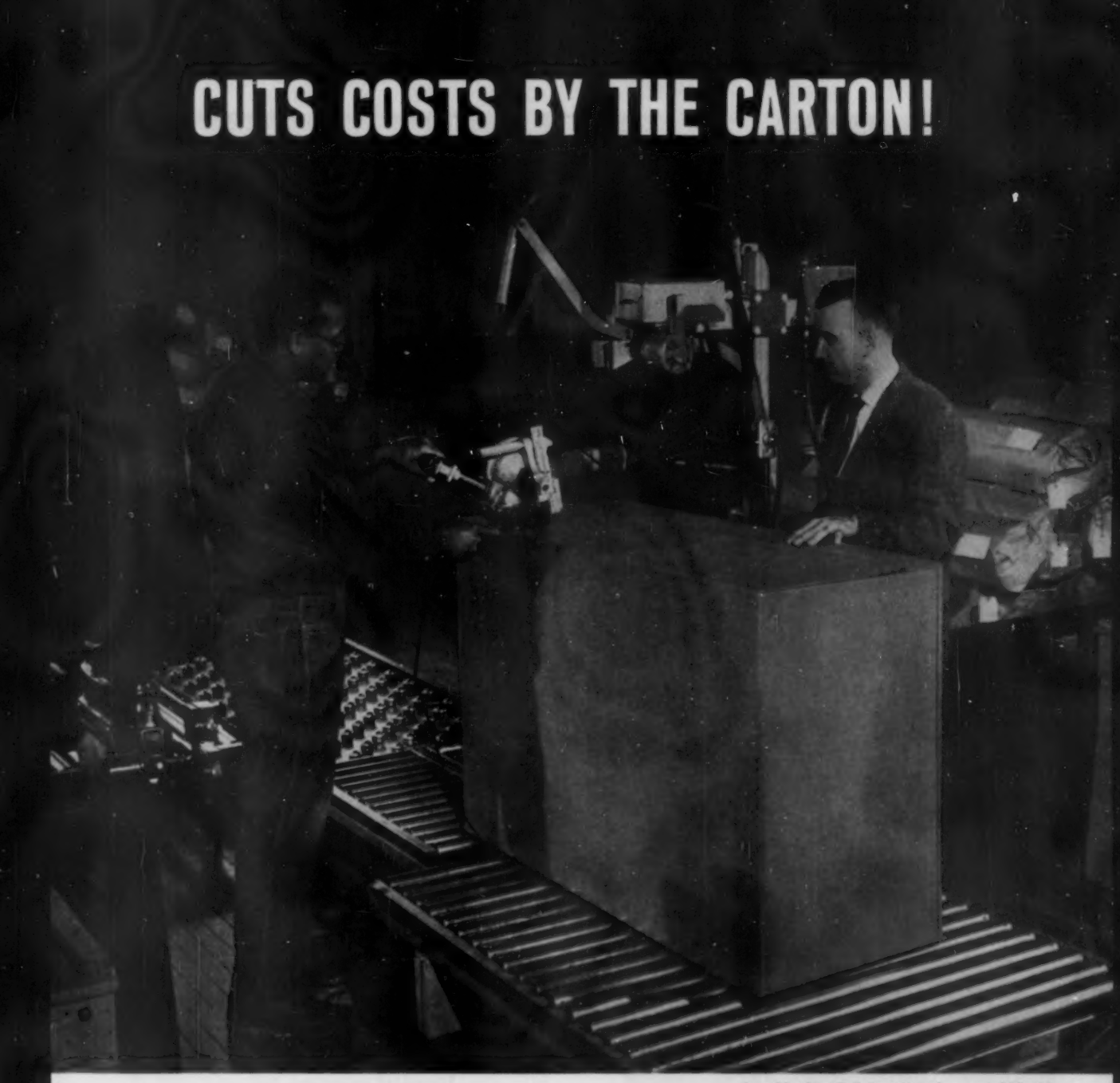
Military spending is also affected by the balance-of-payment directives. Because military and civilian post exchanges and commissaries will buy more from home, U.S. suppliers will get a bigger share of the smaller procurement pie. Some items, such as oil, rubber, and sugar, are exempt. The main category affected will be consumer goods.

*

Some indications of President-elect Kennedy's foreign economic policies come from his top advisors. His course will be more liberal than Ike's, but a conservative Congress, including strengthened conservative regional influences from New England and the South, will tend to reinforce what some Kennedy confidants regards as conservative leanings on the part of the ex-Senator.

Kennedy's trade policy will include pressure for expansion. But he evidently also will consider the situation of domestic producers who have been injured by the foreign import competition that federal subsidies and readjustment programs have stimulated.

# CUTS COSTS BY THE CARTON!



*Acme Idea Man E. S. Lumpkin, who suggested Idea No. 55-17, views it in action at Virginia Mills, Inc., Swepsonville, N. C.*

This textile mill now straps 25% more cartons per day with only half the manpower! They simply converted from a two-man hand strapping operation to an Acme Steel fully-powered A4 Pneumatic Steelstrapper and E41 Power Strap Feed Unit.

The versatility of this equipment easily accommodates all sizes of cartons. And its speed allows the packing department to keep pace with increased production without adding personnel.

If *you* would like to pocket more profit by improving packaging techniques, call your Acme Idea Man, or send the coupon for facts.

ACME STEEL

**IDEA LEADER IN**

## STRAPPING

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Acme Steel Products Division
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Please send me Idea No. 55-17 and examples of how major companies in my field use Acme Steel Strapping.

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*Title*_____

*Firm*_____

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*City*_____ *Zone*____ *State*_____

## New Economies in Flat-Belt Operation

Tanastic, the nylon core leather belting by Rhoads, makes no maintenance demands. Will not slip because it is stretch-free. Maintains tension, runs straight and true. Tanastic starts up without slipping, and runs at highest speeds required in mill operation.

Ask a Rhoads belt-drive engineer about Tanastic nylon core leather belting, Texalon nylon core synthetic belting, or famous Rhoads Tannate leather belting. Literature on request. Address Engineering Department, J. E. Rhoads & Sons, Wilmington 99, Delaware.

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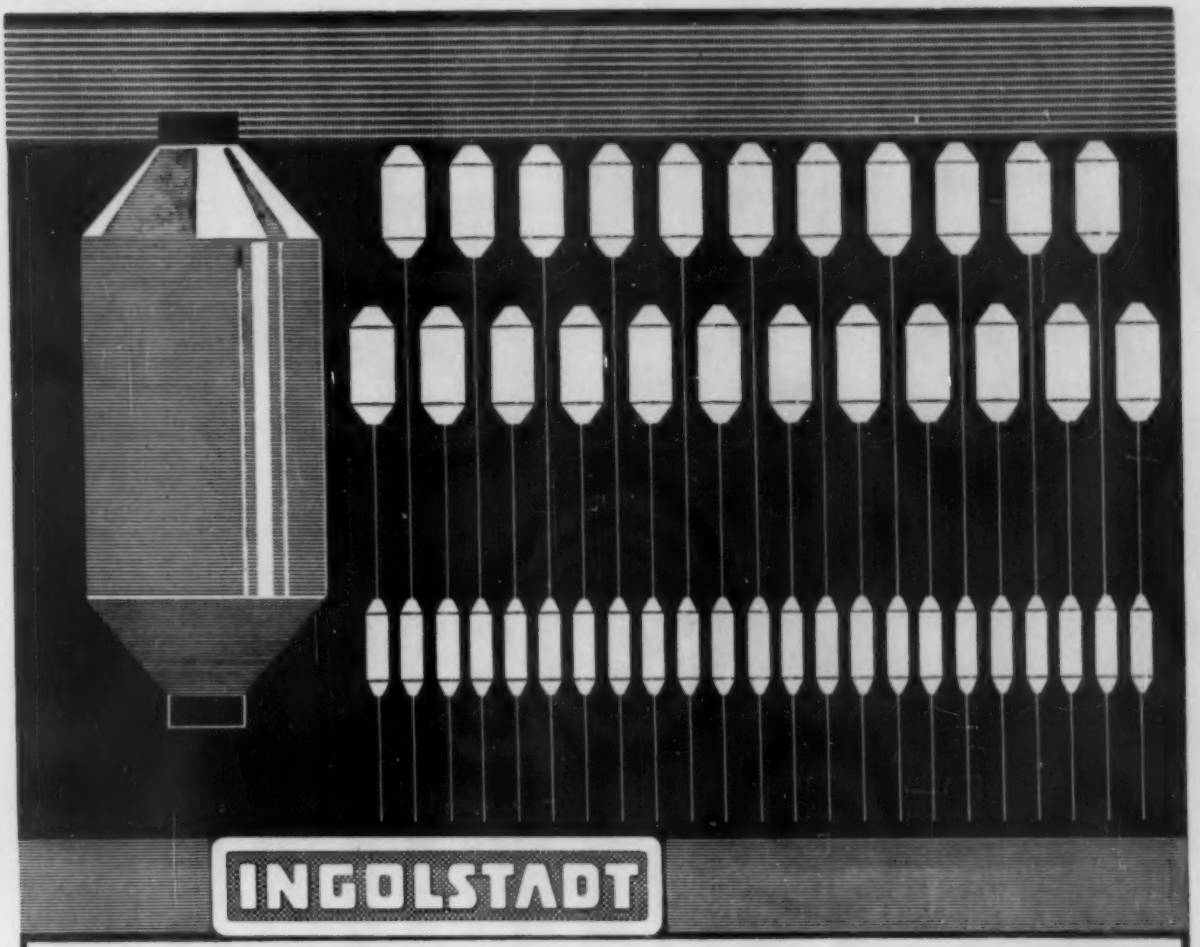


Planning and supply

of complete spinning plants for cotton, worsted,

artificial and synthetic staple fibres

DEUTSCHER SPINNEREIMASCHINENBAU INGOLSTADT/Donau

# OXYTROL Low B.O.D. STARCH

Water disposal problems are solved more economically when you use Staley's latest contribution to the textile industry—OXYTROL Low B.O.D. Starch. For this economical warp size has some 70% less B.O.D. (biochemical oxygen demand) than regular starches. Recommended for sizing a variety of yarns—mill trial runs show OXYTROL gives nearly twice the effective weaving protection of ordinary starch sizes.

Examine the many advantages of convenient, easy-to-use OXYTROL. Save up to 20¢ a pound on your low B.O.D. materials costs. See your Staley representative for further information, or write:

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TEXTILE WORLD

# Management Bulletin

***Things you should know about . . .***

## The Cotton Cycle

Hint of things to come: Cycles Magazine (published by the Foundation for the Study of Cycles, New York) says cotton consumption follows a cycle that runs its course in 23.75 months. "This cycle had a low at February, 1960," the editors say, "and is now on the way up to a high due in February, 1961." If the cycle watchers are right, that means a low in late January, 1962, a high about mid-January, 1963.

## Finding Overseas Customers

Just out: International Telephone Directory. Two volumes list almost 500,000 firms (over 1,300 textile firms and executives) in 108 nations. One of many uses: A prospect list for mills in the market for overseas customers. It has information on conducting business via international telephone, world-wide call rates, table of exchange rates, and other data. For more information write J. A. Barnes, Corporate Public Relations, 500 Fifth Avenue, New York 36, N. Y.

## Using Credit

One of four American companies gets 20% or more of its business from "marginal" customers, the National Association of Credit Management reports. Other findings of a recent survey among the association's 35,400 members: Collections are slower this year than last for 37% of responding companies. Fifty-two percent of credit managers expect collection problems to increase in 1961. Sixty percent foresee a trend to interest charges on overdue receivables.

## Executive Failure

Why do executives fail? One reason, often overlooked, is lack of tact. A management consultant told a group of managers recently: "The executive thinks he can do three things well—drive a car, understand women, and judge men. The fact is, he can't do any of them as well as he thinks." The consultant went on to say that 95% of executive failures are due to "social" reasons—that is, lack of tact.

## Employee Morale

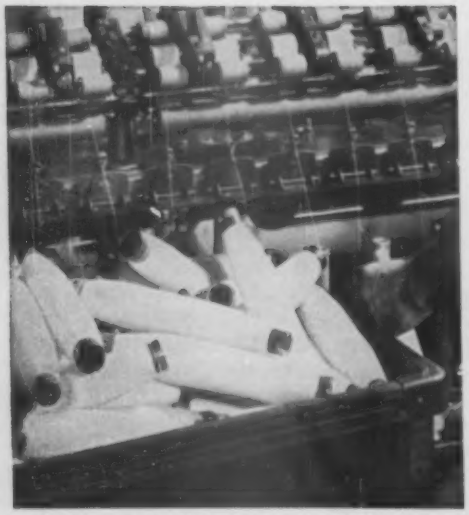
Chamber of Commerce of the United States reports that waste and absenteeism decline, productivity increases when employees have a clear understanding of what you're up to. "Morale of your employees has a direct bearing on the success of your business . . . a contented worker is a better worker," says the Chamber. Moral: Let your people know—in general terms—the whys of cost cutting, extra shifts, and other aspects of your operations.

## The Things You Say

**Capsule Review:** New book on talking is just out. Called "The Art of Persuasive Talking," it's crammed with useful ground rules. Sample of contents: How to interest people in your ideas. How to turn disagreement to agreement. How to argue convincingly—and prove your point. How to handle 29 common talking situations. Write McGraw-Hill Book Co., Inc., New York, 36.—$4.95

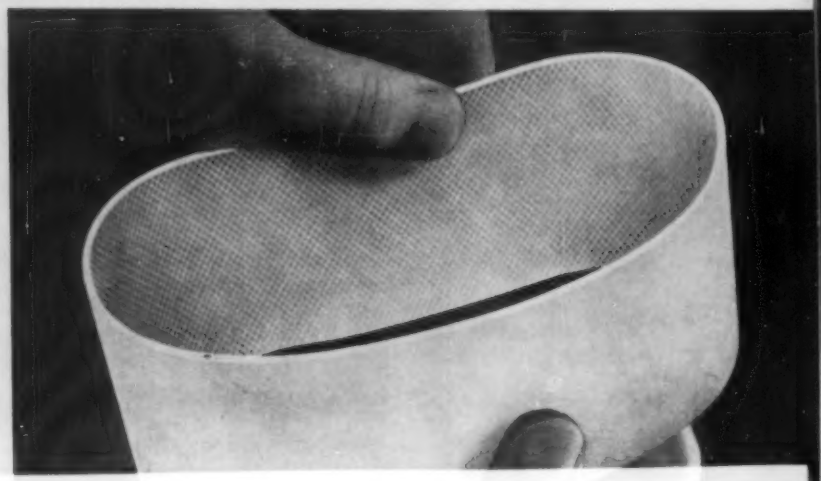
**RIGHT FROM THE START UP,** you get uniform yarn. No sets, no depressions, no time wasted, no need to turn over a couple of times to iron out. Dayco Aprons and Cots make both speed and quality possible. After week-end shutdowns, Dayco Aprons and Cots immediately deliver top quality yarn with no long line of ends down. Fibers just don't stick to Dayco Aprons and Cots, natural fibers with gummy oils don't affect them, temperature and humidity can't bother them.

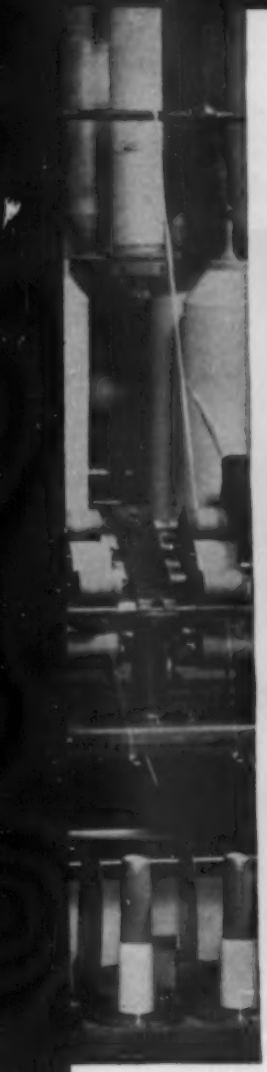
# GET 12% BETTER YARN . .

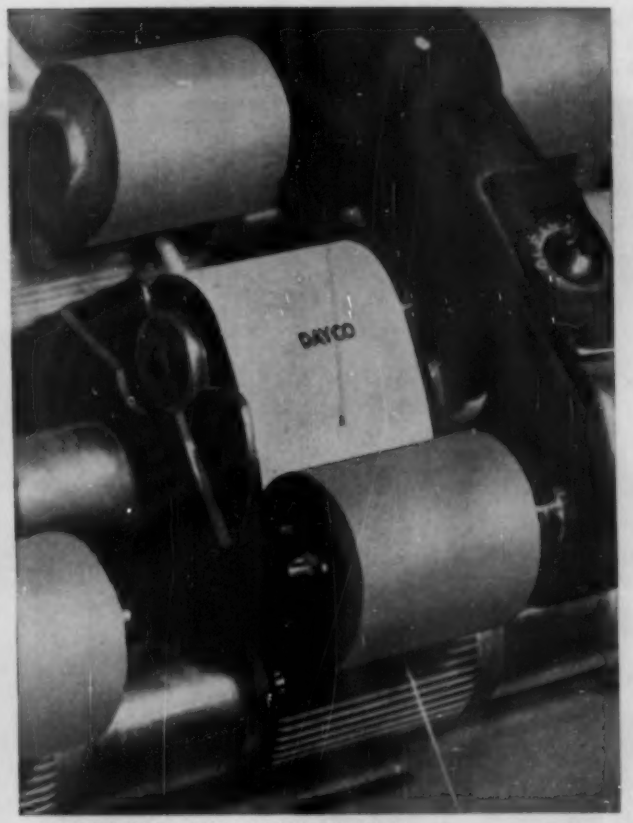


**"UPS OUTPUT** of strong uniform finer quality yarn" reports the overseer after a day with Dayco Aprons and Cots. Dayco's got just the right surface friction to leave the larger fibers in the yarn, not on the clearer board. You can count on Dayco Aprons and Cots when you want to count important extra yardage . . . better yarn . . . more full bobbins . . . at the end of the shift.

**DAYCO'S EXCLUSIVE EMBOSSED DESIGN** keeps the shaft clean, cuts your apron drag 50%, prevents tucking and eliminates waste-collecting. No sign of apron chatter, either.








**DAYCO COTS STAY GOOD AS NEW** year after year from buffing to buffing . . . keep all their fine-quality drafting characteristics. Dayco's long-run, top performance makes them the choice in leading mills.

# . . . TROUBLE-FREE PERFORMANCE

## with Dayco Aprons and Cots, the pair for profits

More yarn . . . better quality yarn . . . more consistency. These are the benefits that explain why Dayco Aprons and Cots are the choice of superintendents and overseers in leading mills everywhere. They are precision-made to exacting tolerances for modern super-drafting, and high yarn uniformity; precision-formulated for longer, trouble-free life. They outlast all others in oxygen-intensified checking tests. Dayco has proven thousands of times in the laboratory and in the mill there is no match for Dayco Aprons and Cots. Throughout their lifetime, they start better . . . stay better longer.

*Ask your Dayco Representative to set up a trial installation. Phone or write Dayco Textile Products Co. (Formerly Dayton Rubber Co., Textile Division) 401 S. C. National Bank Bldg., Greenville, S. C.*

**Dayco** TEXTILE PRODUCTS CO.

Dayco

*Divison of Dayco Corporation*

OVERSEAS PLANT: THE DAYTON RUBBER CO. LTD., DUNDEE, SCOTLAND

# Report of APRON CHECKING COMPARISON TEST MADE IN OZONE CHAMBER

DAYTON RUBBER researchers found Dayco Aprons superior in a comparison test. All apron brands were exposed in an intensified oxygen chamber developing $O_3$(ozone).

This test, simulating actual plant conditions in the $O_3$ chamber converted months to minutes and showed even the leading brands developing the spiderweb checking many "months" sooner than Dayton.

### MECHANICAL VS. CHEMICAL— A NEW VIEW ON CHECKING

Air conditions in textile plants have changed greatly in recent years. We find greater turbulence of air over the cleaners, a marked increase in number of motors, plus motors of larger size, air conditioning and many other air factors. Yet Dayton laboratory research and field investigation find the checking problem should be studied in terms of mechanical, rather than chemical wear-and-tear. The new sharper angle of the apron and the machines with the new nose bars, the greater demands on machines all suggest research into synthetic compounds instead of the air conditions in the plants. Research into "rat tailing," frictional heat build-up—powerful enough to strip gears—and apron chatter promise sounder answers to apron problems than the negligible amounts of ozone found in the air.

### DAYTON ATTACKS BOTH CHECKING CAUSES

Dayton researchers have as a result of this problem reformulated compounds not only to meet *chemical* conditions but also to cope with the newer *mechanical* conditions. Dayton researchers developed formulations for *lower* coefficients of frictions around the new narrow-nose tensors, yet more exacting coefficients on the apron surface for smoother more uniform yarn.

***Another new development using***

# B.F.Goodrich Chemical *raw materials*

*ULOK Brand Cube-Type Filters, developed by Union Carbide Development Company, a Division of Union Carbide Corporation, New York, N. Y., offer the face area of a 30" x 30" air filter in the frontal area of a standard size filter, 20" x 20". Non-woven material is Dynel modacrylic fiber bound with Geon vinyl latex by Fiber Bond Corporation, Chicago, Illinois. B. F. Goodrich Chemical Company supplies the Geon vinyl latex.*

## New, cube-shaped air filters use non-woven made with Geon

The unusual shape of this new replacement air filter is planned to take advantage of a fibrous filter medium of uniform density—a non-woven construction made with Geon vinyl latex as a binder. The cube shape presents more filtering surface to the air stream, providing far higher efficiency over far longer life.

The filter design demonstrates how the unusual balanced physical properties of Geon latex as a binder can pay off. Geon is responsible for the resilience and strength in the batt, allowing the material to be cut, sewed, and formed into the required shape while still maintaining its 2" loft.

Here's another example of service and products you can get to produce better textiles for wider appeal, at lower cost. For information, write Dept. KB-6, B.F.Goodrich Chemical Company, 3135 Euclid Ave., Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ont.

PRODUCTS FOR TEXTILE IMPROVEMENT

**B.F.Goodrich Chemical Company**
a division of The B.F.Goodrich Company

**B.F.Goodrich** GEON vinyls • HYCAR rubber and latex • GOOD-RITE chemicals and plasticizers

TEXTILE WORLD . . . Editorial

# Big? Sure. But Is It Big Enough?

In the year just ahead—1961, that is—manufacturing industries in the United States plan to spend $14-billion for new plant and equipment. That is only 3% less than they are spending in 1960. These figures come from the annual October survey of business' plans for capital spending conducted by the McGraw-Hill Department of Economics.

A 3% drop isn't exactly the kind of thing to touch off a boom. But neither does it portend a bust. **Any way you look at it, $14-billion is solid, high-level capital spending—a lot of money to pump into plant and equipment and a guarantee of a prosperous future for the industries and companies that spend it.**

Suppose you take the textile-industry figures out of that $14-billion. What then?

**The survey shows that for 1961 the textile industry plans to spend $420-million for capital improvements.** That is less than it spent in 1960—a very big year—but measurably more than it spent in 1959.

We suggest that what the textile industry plans to spend in 1961 is good, but not good enough. Right now, more boldness in capital spending would be a shot in the arm for the industry itself and would give a brisk lift to the nation's economy. It is the best way the industry can fulfill its obligation to itself and its future, to its employees, and to our system of free capitalistic enterprise.

We do not suggest that any one textile company—or even the entire textile industry—could match the drama of General Motors' recent announcement that it will spend $1¼-billion for modernization, new tooling, and new plant in 1961. But we do offer one observation: The industries that lead the earnings parade year in and year out are the industries that keep their capital spending at a high level—come good, bad, or uncertain times.

Can the textile industry afford boldness of this magnitude?

We think it can. Here's why:

• **This year, 1960, will show up as a banner year for profits**—just about as good as 1959, and perhaps even better, in spite of a little slide in the second half.

• **Productivity is at an all-time high.** The rate of increase is higher than that for all other industries in the nation.

• **The industry by and large has resisted the temptation to produce for inventory and unload at a loss,** though the market has been a bit soft here and there. Result: profit protection, and a sound financial position for most textile manufacturing companies.

• **A favorable operating rate has prevailed all year long.** The McGraw-Hill survey shows the textile industry running at 92% of capacity in December 1959 and at 88% of capacity in September 1960, against an ideal rate of 97%. In other words, in September there was a spread of only 9 percentage points between actual and ideal—the lowest spread among all the industries in the survey. Electrical machinery, for example, ran at 19 points below its ideal operating rate in September; chemicals, 16; paper and pulp, 10; petroleum refining, 14; all manufacturing, 15.

In short, as we see it, the textile industry is stronger than it thinks—and so are the companies that make it up. We believe that a hard, realistic look at itself will strengthen its will to invest in new mills, new machines, and continuing modernization. That way, the industry will hold its historic place—up near the head of the capital-improvements parade, doing its share to maintain a high-level economy and, at the same time, insuring a better future for itself, its employees, and its customers.

*Why you should make an*

# Employee Attitude Survey

*More mills, these days, are turning to attitude surveys to take measure of employee morale. Result? Management can spot trouble before it begins, can take corrective action fast. Here's the inside story on this useful management tool.*

THE TROUBLE may be as small as dissatisfaction with the location of the tool crib. It may be as large as unhappiness with the town in which the mill is located. But small or large, serious or trivial, the private grievances and unfavorable attitudes your employees are harboring will hurt their productivity—and your profits.

Attitude surveys (see photos and illustrations on the following pages) locate these private troubles so you can correct them. These surveys can help you by . . .

*Revealing a profile* of employee morale and opinion.

*Probing a sore spot* (an unproductive department, say).

*Answering a specific question* (what employees think of your promotion system).

*Comparing different mills* in a multi-plant operation.

Making attitude surveys is not a job for just anybody. In fact, they hold real dangers for the manager who isn't a professional at surveying attitudes. Such a manager sometimes thinks himself an expert on employee attitudes, doesn't realize how hard it is to gage them correctly. Following the well-known rule "Know Your Subordinates," he makes a personal foray for information. Trouble is, his amateur efforts are usually prejudiced and almost always incomplete. What's more, the findings are often distorted because employees don't like to give the boss bad news.

The job does require a professional. In the hands of a competent industrial psychologist the tests can give an accurate, complete, and detailed measure of employee outlook. They can provide:

- **Investigation**—They will expose what employees believe to be the facts—and how their opinions differ from the truth.
- **Evaluation**—They will let management see itself as others see it.
- **Correction**—They will point out defects in procedures and in plant facilities.
- **Communication**—They will get employees' opinions through to higher management.
- **Morale boosts**—They will show management's concern for its employee's opinions.

In all five ways, attitude surveys can help you run a more profitable business. The investigative survey, for instance, does more than just produce information. It can lead to great savings. A recent survey in one textile mill that had been suffering from inefficiency found that the men did not know their jobs well enough. It turned out that supervisors had failed to give them proper instructions. It was a simple problem to correct—once management knew what the problem was.

In another mill, interviews revealed confusion over the company's free-time rule. Investigators found that administration of the rule varied so much from department to department that there might as well not have been a rule at all. By simply telling everyone the rule and emphasizing its enforcement, the company saved thousands a year.

## GAGING WEAKNESSES

A survey by management consultants, Richardson, Bellows, Henry & Co. (RBH) led one textile mill to re-evaluate its strengths and weaknesses. The company was having difficulty recruiting technical men for one of its plants. So RBH asked the technical people already at work in the plant what they liked and disliked about the jobs and the community. Here is a page from the report that reveals the RBH techniques that were used:

"We asked the technical men to rate 15 items describing the . . . community as to whether they were a source of satisfaction, a source of dissatisfaction, or indifferent as to influence.

"One very interesting finding emerged, a finding that we believe can be put to great use in recruiting.

. . . *Turn the page*

By RUTH G. FROST
Business Consultant
New York City

## EMPLOYEE ATTITUDE SURVEY

. . . *Begins on page* 32

Perhaps an amusing illustration will prove the point:

"Suppose you are a recent college graduate invited to ABC Co. for a two-day look at the plant and an opportunity for several people to look at you. You arrive at the railroad terminal and seek public transportation [the second most dissatisfying item, according to the survey of the technical staff]. You take your bus to the plant through several traffic snarls over a rather roundabout course, during which you observe several of the streets and highways [the most dissatisfying item]. Naturally, you blame the municipal and parish [county] government [the third most dissatisfying item] for both the bus and the streets.

"After work you go to the hotel of your choice (unfortunately, we did not include hotels in our survey, but our interviewers would like to express an opinion there) and then go out to do the town. Since the stores are still open, you inspect the shopping facilities [the fourth most dissatisfying item] and after dinner you look for some amusement or entertainment [the fifth most dissatisfying item]. You try what is available or give up and buy a newspaper [the sixth most dissatisfying item]. You go back to your hotel room through whatever weather happens to be prevailing at the time [the seventh most dissatisfying item].

"At no time have you really been exposed to the things that make . . . City satisfying to the technical men who work for ABC Co. [in order of expressed satisfaction]: other company people in the community; religious activities; . . . City people generally; societies, clubs, etc.; natural recreation facilities (fishing, boating, hunting, etc.); housing conditions; commercial recreation facilities; and school facilities for children. Yet all the above named factors were classed as satisfying by a clear majority of the technical men. We think you can use these facts as a selling device. To get the . . . City Chamber of Commerce going on some of the dissatisfactions might be an excellent project.

### PAYOFF: A NEW PITCH

Results of this report: The company rewrote its recruitment brochure to emphasize the favorable features and persuade the chamber of commerce to start eliminating the unfavorable ones.

A classic case of this type occured in an attitude survey done at a large chemical plant making finishes for textiles. The interviews showed that many workers were dissatisfied with the location of the tool crib. The investigators found the best spot and moved the crib. Result: The company reduced its maintenance force by one-third and saved $300,000 a year.

In another study, one department's responses varied greatly from all the others, although outwardly conditions were exactly the same. Further investigation revealed that the wife of the foreman worked in this agitated department and the other women resented her. When she was transferred, the only obstacle to good performance disappeared and the department became productive again.

In addition to their other benefits, attitude surveys can be morale boosters for your employees. They are a sign that management is concerned with its workers' opinions of the company.

They can also ease communication between employees and management, which is often impeded by bureaucratic paperwork. One company was proud of its safety program and pointed to a healthy stack of reports as evidence of employee interest. But an attitude survey revealed how little the workers really thought of the program and how mechanical the report filing had become. Result: a revision of the safety program that made it important to the workers.

### PROBLEMS SOLVED

Through investigation, evaluation, correction, morale boosting, and communication, the attitude survey can help you with the everyday problems of your mill. Good industrial psychologists won't talk in generalities. They'll give you answers to specific questions.

And they can do this for firms of 50 to 5,000 at a cost as low as

$1,000. With large companies, a team of psychologists will administer, score, interpret the tests. A "do-it-yourself" program is commonly recommended for small organizations, with one psychologist preparing the questionnaire and guiding management in the administration of the survey.

The first thing the investigators will do is hold a series of "vertical round-table conferences" with men from all levels of management. They want to find out your goals. They also want to discover differences of opinion among the executives.

In one group of conferences, for instance, RBH found most of the long-service executives well pleased with the pension plan, most of the short-service people against it. The company hastened to make changes so there was a uniform good opinion of the plan.

## POSING QUESTIONS

From conferences like this one, the psychologists will create a questionnaire specifically for your problems. In the normal situation, they will probe ten categories of job satisfaction—working conditions, pay, benefits, future opportunities, communications, teamwork, supervisors, organizational efficiency, personal satisfaction, and the company itself.

A popular technique of questioning presents the employee with affirmative statements and asks him if he (a) definitely agrees, (b) moderately agrees, (c) moderately disagrees, or (d) definitely disagrees.

This method was used in a recent survey of a Connecticut company. Here are a few of the statements with which employees were asked to state their degree of agreement or disagreement:

**The Company**

Our products are well-made.

Management really adds equipment and facilities as needed.

**Working Conditions**

Equipment, supplies and facilities in my section are good.

Lighting conditions are good where I work.

**Pay**

The system of overtime and overtime pay is satisfactory.

All in all, I am satisfied with the pay I get here.

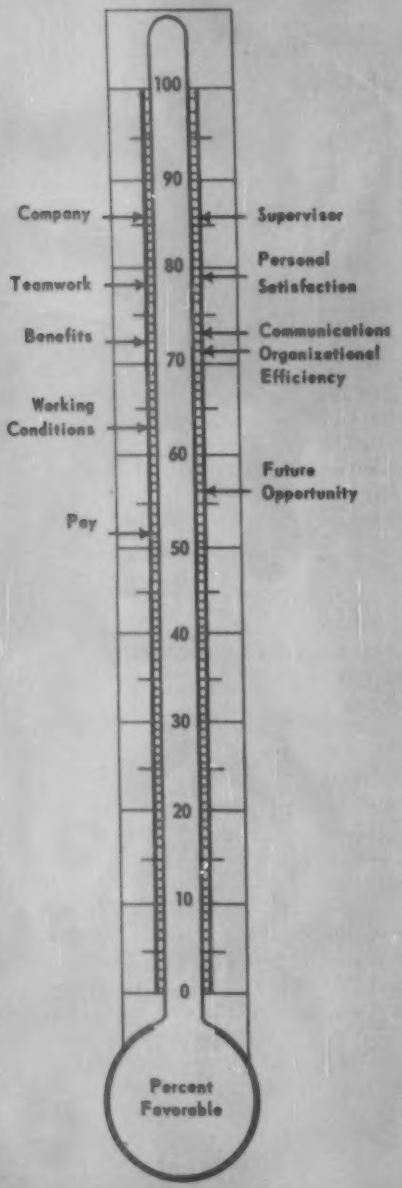
. . . *Turn the page*

# 3 Reasons Why You Should Make An Employee Attitude Survey

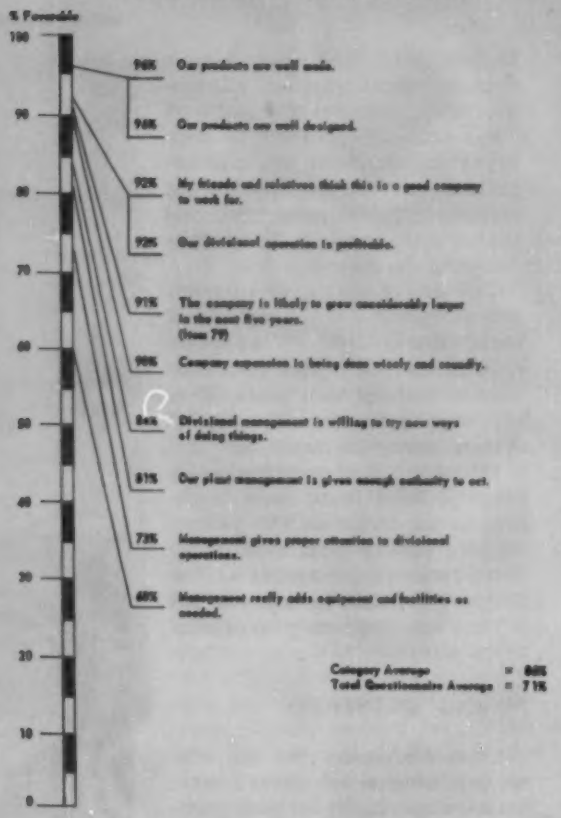
## 1. To compare elements of morale.

At this mill, employees think highly of both the company and supervision, not so well of future opportunities, present pay scales. Yet even these gripes aren't serious.

### MORALE THERMOMETER




### PERCENTAGE CHART


% Favorable
100
90
80
70
60
50
40
30
20
10
0
98% Our products are well made.
96% Our products are well designed.
92% My friends and relatives think this is a good company to work for.
92% Our divisional operation is profitable.
91% The company is likely to grow considerably larger in the next five years. (from 79)
90% Company expansion is being done wisely and soundly.
84% Divisional management is willing to try new ways of doing things.
81% Our plant management is given enough authority to act.
73% Management gives proper attention to divisional operations.
69% Management really adds equipment and facilities as needed.
Category Average = 86%
Total Questionnaire Average = 71%

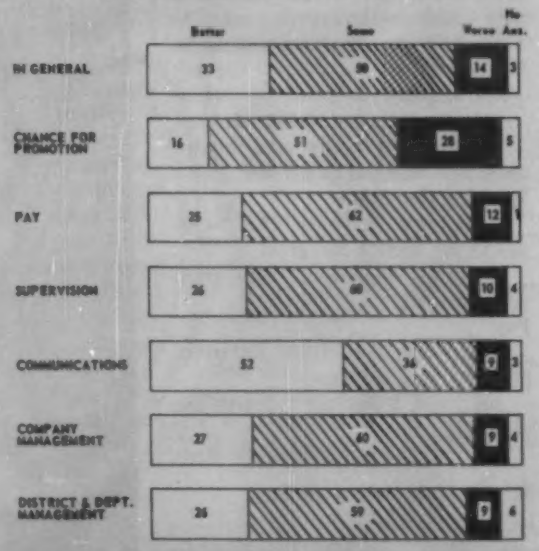
## 2. To spot company strong points.

This listing of key morale questions shows what proportion of employees agreed with statements included in questionnaire. Here quality shows up high, modernization not so high.

## 3. To chart progress from year to year.

This diagram shows how employees at one mill compare their feelings with those of two years ago. Note that in most categories workers are more satisfied today than two years ago. Communication is rated as greatly improved.

### COMPARISON CHART



**Future Opportunities**

My chances for the future here look good.

I have a clear idea of how I can get ahead in the company.

**Personal Satisfaction**

The work I am doing is important and worthwhile.

There is no favoritism here. I'm satisfied with that.

**Organizational Efficiency**

Work is planned and assigned so that our section runs efficiently.

Policies and procedures are followed consistently.

**Teamwork**

We have good teamwork in my section.

My superior gets good cooperation from his boss.

**Supervisor**

I feel free to make complaints to my supervisor.

My supervisor always lets me know beforehand of changes that affect my work.

**Communications**

Those who are responsible for promotion know how well I am doing my job.

I am kept informed on what goes on here.

## ADDING UP RESULTS

The results of these attitude surveys are summarized in charts that show executives the trouble spots without pages of statistics.

RBH uses a "Morale Thermometer" to compare the categories of job satisfaction (see page 36). For each category it calculates the percentage of favorable responses, so a company can see what its employees value most and what least. The relative standing of the categories is more important here than the absolute percentages.

A Percentage Chart shows how the items within each category rate in relation to each other (see page 36). Here again, the percentage of favorable replies is the significant measure. In the case of the company in the illustrations, the attitude toward it was considered favorable by the investigators because there were always more than 50% favorable responses.

In summing up employee attitudes, industrial psychologists often give a synthetic statement from a typical worker. Here is such a statement from a recent survey:

"This is a nice place to work. The office layout and facilities are pretty decent—except for a few pains that everybody knows about, like the parking lot.

"I like my work and the people I work with and for. Especially my supervisor—he's a good egg.

"Life runs smoothly here and the pace isn't rough. There aren't any particular headaches, except maybe for occasional slip-ups in coordination between other sections and ours and a lot of paper work. Stability, rather than change, characterizes this place.

"I have no worries about holding my job. I'll probably get promoted eventually—if I stay long enough and the right people like me.

"But my pay is none too good—this is what gripes me most."

## MAKING INTERPRETATIONS

Preparing, administering, and interpreting an attitude survey is no job for an amateur. Making unbiased questions and seeing the real meaning of the answers requires the skills of a professional man—and an outsider. The professionals can also show you how you compare with competing companies and with other industries.

All this service puts obligations on you. Industrial psychologists will ask why you want a survey and if you will do anything once you have the results. If you aren't prepared to take the proper corrective measures, some consultants may not do the survey. An attitude survey builds up the hopes of employees for correction of their grievances. If no correction results, the disappointments intensify their dissatisfaction and destroy confidence in you. You will lose more in damaged morale than you gain from the information.

On the other hand, you should impose requirements on any consulting firm. Occasionally attitude surveys will give an unwarranted rosy opinion profile that lulls clients into a bog of complacency. You must beware of:

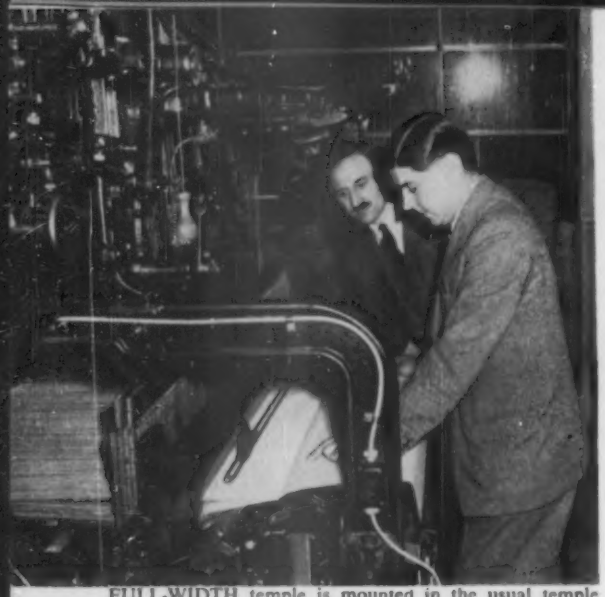
• **Exclusive use of agree-disagree questions.** People tend to agree with strongly-worded statements. The less intelligent the subject the greater the tendency to say "Yes." Behavioral scientists have documented this inclination to agreement many times. In one research project, subjects agreed with 70% of the statements made to them. Six months later they agreed with 70% of direct contradictions. You can avoid the misleading rosy picture by having your employees given negative statements as well as positive.

• **Failure to use open-ended questions.** Open-ended questions are fill-ins that make your employees think up their own answers rather than choose between suggested responses. "What I like (dislike) about this company is ....." and "My relations with the department supervisor are ....." are typical open-ended questions. Include these in any survey and encourage complete answers.

• **An arbitrary "favorable" point.** Investigators sometimes say a certain percentage of favorable responses or higher represents "satisfaction" or "a favorable attitude." Don't be deluded by this arbitrary line-drawing. There is no absolute standard of acceptability. Often the acceptance point that's as low as 50% glosses over a discontented minority.

Attitude surveys can show you that the employees are happier with your promotion program than with working conditions. They can show you how your attitude profile compares with that of other companies. They can show how your employees' attitudes change over time. They cannot tell you that your employees are satisfied or dissatisfied, favorable or unfavorable in an absolute sense. Attitude surveys say things are better or worse, not good or bad.

But if you are aware of these limitations and are sincere in the desire to correct dissatisfactions, attitude surveys can help you solve some of your toughest problems. They do this by measuring employee attitudes to an extent you never can —simply because you are The Boss. And the savings that result will make your own attitude a lot happier.



FULL-WIDTH temple is mounted in the usual temple position, but closer to the fell of the cloth. Fabric forms a straight line all the way across. And fabric selvages form a straight line with warp. Inventors Townsend (left) and Foster report the WIRA temple is being widely adopted by English mills.

# New Temple Cuts Wool-Mending Costs

*Tired of spending time mending and burling your wool and worsted fabrics? Is it more time than you spend weaving? Then look at this new full-width temple now being adopted by English mills. It may pay off for you, too.*

AN ENGLISH woolen and worsted weaving mill has equipped 90% of its looms with a new-type full-width temple. Here's what mill management (John Halliday & Sons Ltd., Bradford) says about its new full-width temple:

"It eliminates cutting and marking. Also it reduces the cost of mending and removes mending-department bottlenecks.

"Equally important, it reduces the tremendous tension on the cloth and the loom at the beat-up. Therefore the weight (tension) on the warp can be reduced.

"In turn, the number of ends down is reduced. And we can now weave cloth with more picks per inch without lowering efficiency.

"Wear and tear on the loom are also reduced. Recently we had a good example of this reduction when a new heavy-picked fabric was literally shaking a loom to pieces. We put this new temple on the loom, and the loom wove smoothly.

"Because the temple holds the cloth perfectly straight and maintains control over the full width of the cloth, filling control is improved, selvages weave better, and standing marks (set marks) are reduced greatly."

By MAURICE BARRETT
Wool Trade Representative
Bradford, England

## BUT NOT PERFECT

Halliday spokesmen are realists, though. They continue their comments as follows:

"There's one disadvantage with the temple in its present form: When the shuttle is trapped—or even partly trapped—in the warp shed, more warp ends are damaged. This is especially apparent on multishuttle looms, where traps are more common.

"And since the temple is very rigid and is close to the fell of the cloth, the reed is damaged more than with an ordinary temple.

"But even with this disadvantage cloth quality at our mill is improved and costs are reduced. Mending costs in particular are cut."

## PROBLEM STATED

The new temple is being adopted widely in the woolen and worsted mills of England. It solves a common problem: broken ends resulting from the great strains on the yarn as the filling yarn is drawn across the loom and is beaten into place by the reed. The new temple holds the cloth firmly across its full width at the fell by a rod in a trough formed between two bars with the cloth passing under the rod. Result: The movement of the fell at the moment of beat-up is reduced, thus effecting a reduction in the number of warp-end breaks during the weaving operation.

Specifically, here's how a John Halliday management man states his problem—the problem that is now solved by the new temple:

"We make a large number of mohair tropical-weight fabrics and export them to all parts of the world, including the United States.

"Our previous type of temple held the cloth in ring pins at each side. This way, one of our major difficulties was temple cutting or temple marking. Mohair isn't as strong as wool—is more prone to be cut during weaving. In fact, temple cutting was sometimes so severe that we had to class finished cloth as seconds or do a tremendous amount of mending and burling."

Today, mending and burling are greatly reduced. With the new temple control of the cloth over its full width is precise, maintaining a straight line across the fell. What's more, heavy fabrics can be woven in looms that are normally too light for them.

The new full-width temple is a development of Britain's Wool Industries Research Association (WIRA). Two WIRA members, Malcolm Townsend and Reginald Foster (shown in the photo) designed it. William Lupton & Co. Ltd. (Leeds, Yorkshire) makes it.

## Fiber Blends, 1961:

# What's Here and What's Coming

THE INFORMATION listed on this chart (this side and the opposite side) tells about standard fiber blends in use today. Here you'll find typical blends, the fabrics and applications these blends are used for, and the basic production procedures used to manufacture and finish these materials.

The blending of different fibers is not a new concept. Combinations of wool and cotton have been used in Europe for many years. Today, the commercial development of man-made fibers has opened up a vast new area of fiber combinations. The rapid increase in noncellulosic man-made fibers has made possible new combinations of fibers for aesthetic and utilitarian purposes.

Fibers can be combined in many forms – filament warp, spun filling; fibers, in yarn form, alternating throughout a warp; pile yarns of one fiber and ground yarns of another. But you won't find anything about these yarn combinations in this chart. It is confined to intimate-fiber blends only. The intimate blend, when run at an integrated mill, requires the blending of staple (or tow) during the manufacture of the yarn.

Fiber blends (particularly with noncellulosic fibers) have been developed for sound reasons. Many new fibers when first introduced were hailed as "miracle" fibers that could stand alone, unblended with natural fibers. In many instances this had proved true – rayon and nylon tire cord, acetate and nylon tricot fabrics, nylon hosiery, and industrial materials, to mention a few. But for the spun-yarn apparel fabrics the blending of man-made and natural fibers offers greater fabric improvements, with fewer objectionable qualities than an unblended man-made fiber would offer.

handled differently from a 100%-cotton shirting. The fabric is singed before scouring and heat-set after finishing. Polyester-cotton blend fabrics must be given a compressive-shrinkage treatment to obtain dimensional stability. Some mills apply resins for hand only, because the basic fabric has wash-and-wear properties.

When you produce polyester-rayon blends with conventional rayon fibers, you need to apply resins to obtain dimensional stability for the rayon, even though the fabric has built-in wash-and-wear qualities. But new blends of polyester-rayon use the modified viscose fibers (recently introduced) and thus do not require resins for stability.

**Latest word** – Most of the polyester and acrylic blends are with wool, cotton, or rayon. But a new concept, introduced commercially in spring 1960, is a 50-50 blend of polyester-acrylic. This 100% man-made combination performs well. Introduced as men's-wear summer suiting, it has also been used for slacks, sportswear, and dresswear. Expert opinion holds that this blend is the real comer for the future.

### ACRYLICS

The acrylic-fiber production capacity in the United States is the second largest among noncellulosic fibers. (Nylon is first.) In general, the acrylic fiber is a warmth fiber. It has bulk characteristics and low specific gravity. It has served well in 100% applications – sweaters and blankets.

The textile industry has designed and produced almost every conceivable ap-

**Applications** – Some recent trends and applications are blends of 50-50 acrylic-and-cotton or -rayon for men's half-hose. Automatic wash-and-wear winter underwear was introduced in fall 1959 lines. These raschel-knit fabrics, in 50-50 blends of acrylic-cotton, reduce potential shrinkage and improve resilience, thus preventing fiber matting. Knitted throw-rug manufacturers use acrylic and modacrylic blends to make rugs that are machine washable and have a flame-retardant quality.

Acrylic-nylon blends are entering the market as fancy yarns for woven knitwear. These fancy yarns (slub and texturized) offer another styling tool for designers. The fabrics are washable and light in weight.

### MODACRYLICS

Modacrylic-fiber manufacturing capacity in the United States is low—about 7-million pounds annually.

**Applications** – Up to now the uses of modacrylics in blends have been limited, in terms of volume products. As of today, their use is restricted to novelty or special styling techniques. But some observers predict that the volume of high-pile fabrics for throw rugs and "furs" will grow over the next two to three years. Many pile or fur-like coat fabrics are blends of modacrylic and acrylic or modacrylic and mohair. These fabrics are produced on circular sliver-knit or woven equipment.

One of the features of modacrylics is their flameproof quality. This is important for high-pile products because the modacrylic prevents flash burning.

**Latest word** – A relatively new approach to modacrylic blends is the Bondyne line of products. This group of fabrics is based on the use of Dynel, at a 30% blend level, for the filling yarn of woven fabrics. The heat-setting properties of the fiber are used to advantage and the fabrics are designed for press retention. Applications are men's woven

greater fabric improvements, with fewer objectionable qualities than an unblended man-made fiber would offer.

Requirements for the apparel fabrics involve several subjective qualities – hand, drape, luster, and comfort. Therefore, these fabrics are hard to evaluate by numerical calculations.

With the proper percentage combinations of man-made and natural (or other man-made) fibers, the desirable features of both fibers tend to predominate and to overshadow some of the less desirable features of each fiber. A polyester-wool blend, for instance, offers higher-strength, lighter-weight, worsted-type fabrics with superior muss resistance compared to all-wool fabrics. Blends thus provide fabric designers with a new tool for achieving top performance, maximum aesthetic value, and good style.

The chart (on the reverse side) lists today's prevailing blends by generic fiber names. This does not mean that any one of these blends is now being produced with all fibers in the generic classification. It does mean that blends made with any fibers from the same generic group will normally produce the same performance and aesthetic properties.

## POLYESTERS

Polyesters have won by far the largest market of commercially produced blends to date. The men's tropical suiting of polyester-wool is the standard in tropical summer suits. The polyester-cotton shirting fabric is well established. It continues to grow in popularity every year. In a 65-35 proportion this blend is used in more fabric than any other single blend on the market.

**Applications** – Polyesters and cotton or rayon blends appear to be a natural combination. The blend levels vary from 35% up to 50% of cotton or rayon. These blends are expanding into women's dresswear, blouses, uniform clothes (nurses, barbers, and waitresses), slacks, knitwear (T-shirts), and sportswear. Fabrics produced are piece- or yarn-dyed.

Polyester-cotton shirting blends are

The textile industry has designed and produced almost every conceivable apparel fabric in blends of acrylic fibers – suiting, underwear, slacks, sportswear, knitwear, and carpeting, to mention a few. Mills today are producing commercial acrylic blends for men's suiting, woven dresswear, slack fabric, sportswear, knit materials, and carpet. But to date, no single high-volume year-around fabric has become a standard. Indications are that the acrylic-wool blends could be the volume fabric for woolens in fall 1961.

**Styling** – Because styling is the big factor in women's and children's wear, producers have concentrated the initial applications of acrylic in this area. Although styling is a factor in men's wear, it is not the biggest factor. The most important factor here is performance and serviceability. The man's first interest is a fabric or garment that performs well. Women seem more interested in styling features – silkiness, high bulk, cross dyes, heather effects, and cashmere types. These interests vary with the styling trends of the day. That is why the fabric stylist or designer and the fiber producer must be in close touch with the changing trends in styles and adopt new fibers and blends to meet these trends.

**Versatility** – Because of rapid and sometimes radical style changes, fiber producers have developed acrylic fibers to meet these needs with variations in the basic fiber. This is why acrylic fibers (of the same trade name) are offered in a variety of types that meet special styling requirements. The fiber manufacturers say that each trademark will be a family of fibers. In fact, this trend is here already. For instance, Du Pont lists 12 types of Dacron, 13 types of Orlon, and 36 types of nylon.

The versatility of the acrylic fiber is demonstrated by its capacity to perform well on any production system – cotton, worsted, or woolen. Mills produce commercial fabrics by all three methods. Fibers are blended as tow, staple, or roving, in accordance with the mill preference or need.

ties of the fiber are used to advantage and the fabrics are designed for press retention. Applications are men's woven slacks and boys' slacks and suits. The fabrics are not considered wash-and-wear or easy-care but offer good press-retention properties. These 30% blends of Dynel are in combination with rayon, cotton, or wool. Some three-way blends have appeared in rayon-acetate-Dynel and rayon-nylon-Dynel.

## HOUSEHOLD USES

Carpets and blankets are large-volume products and as such are a natural consideration for fiber blends.

Intimate blends in blankets are a small portion of the over-all market. Some mills do use low-percentage blends of rayon with acrylic, but these are specialties. The trend has been to 100% pile surfaces using wool, acrylic, rayon, and cotton.

**Carpeting** – The recent trend here is away from fiber blends. A few seasons ago many fabrics for carpeting were offered in blends. Today most of the carpet producers make standard blends – 70-30 and 50-50 wool-rayon, 70-30 wool-nylon, 70-30 and 50-50 wool-acrylic, and 80-20 acrylic-nylon. But the total yards offered in intimate blends is only a small percentage of the market. One large carpet producer says that intimate blends account for less than 3% of his total production.

Other large-volume items such as household products, draperies, and upholstery have not been made from fiber blends. Many of these fabrics use combinations – different types of yarns in warp, filling, or pile. But few household fabrics have been designed with intimate fiber blends in both the warp and filling.

## INDUSTRIAL FABRICS

Industrial fabrics are made from many of the man-made fibers – for example, modacrylic for filter fabrics, nylon for coated fabrics, olefin for filter fabrics.

But cotton is still king in total fiber consumed for industrial fabrics. Few intimate fiber blends are on the market today for industrial applications. There is some reason to believe that man-made fibers, in blends, could become a factor in this market, but the requirements for industrial fabrics are strictly utilitarian. A product must meet a specific need and perform accordingly. Styling is of no importance.

## THREE-WAY BLENDS

The feasibility of blending three fibers into a single yarn has been proved in textile-fabric development. Some blends are on the market today (50-30-20 of acrylic-polyester-rayon) and many knowledgeable people think three-way blends will increase in volume.

**A word of caution** – These blends do not process as easily as the two-fiber blends. Also the dyeing and finishing are somewhat more critical, especially if cross-dye effects (for styling) are desired.

The usual reason for using three-fiber blends is to obtain a lower cost product. Two high-performance fibers can be combined with a small percentage of rayon (15 to 25%) or other low-cost fiber. The resulting blend is as serviceable as a blend of high-performance fibers if the blend has been diligently designed for a specific end-use requirement. This technique of three-fiber blends is also used as a styling tool for achieving new and various textures.

## PERFORMANCE LEVELS

With two- and three-fiber blends becoming more and more common especially in the apparel field, the fiber producers have taken an active interest in developing and establishing recommendations for blend levels.

These blend evaluations follow well-organized fabric-development procedures. Different blend levels are pro-

During this same period the acrylic blends remained fairly static. Total production for acrylic blends during January to June 1960 was 9-million linear yards. This breaks down to 3-million of acrylic-wool and 6-million of acrylic with other fibers as the component.

Production of rayon and/or acetate blends indicates what may be some significant trends. Blended with wool, the rayon and/or acetate production dropped to 0.5-million yards in the second quarter of 1960 compared to 3.6-million yards in the same period of 1959. First-quarter 1960 production was 0.7-million yards.

The rayon and/or acetate and cotton blends totaled 10.6- and 10.8-million yards in the first and second quarter 1960 respectively, up from 7.6-million yards in the second quarter 1959.

## MORE FACTS ON DYEING

The classes of dyes listed for each specific blend on the blend chart (see reverse) are the ones in most common use today. However, not every type of dye listed is necessarily appropriate for each fiber component of the blend. While these are the most common dyes in use, other types of dyes could be applied.

The class of dye you choose will depend on the specific fiber used in each blend and the dyeing characteristics you want.

---

The chart below supplements the dyeing information on the main chart. It tells more completely the types of dyes now available and the fibers that they are used on.

### Fast-Reference Dye Chart

| TYPES OF DYES → | Acid | Azoic | Cationic | Chrome | Developed | Direct | Disperse | Premetallized | Reactive | Soluble vat | Sulfur | Vat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIBERS ↓ | | | | | | | | | | | | |
| Acetate | | X | | | | | X | | | | | |
| Acrilan | X | X | X | X | | | X | X | | X | | |
| Acrilan 16 | | | X | | | | X | | | | | |
| Arnel | | X | | | | | X | | | | | |
| Cotton | | X | | | X | X | | | X | X | X | X |
| Creslan | X | | X | X | | | X | X | | | | |
| Dacron 54 | | X | | | | | X | | | X | | X |
| Dacron 64 | | X | X | | | | X | | | | | |
| Dynel | X | | X | | | | X | | | | | |
| Fortrel | | X | X | | | | X | | | | | |
| Kodel | | X | | | X | | X | | | | | |
| Nylon | X | X | | X | | X | X | X | | | | |
| Orlon | X | | X | | | | X | | | | | |
| Rayon | | X | | | X | X | | | X | X | X | X |
| Verel | | | X | | | | X | | | | | |
| Vycron | | X | | | | | X | | | | | |
| Wool | X | | X | X | | | | X | | | | |

These blend evaluations follow well-organized fabric-development procedures. Different blend levels are produced and the resulting yarns are woven and finished in various fabric constructions. Next, these development fabrics are laboratory tested. Then the fabrics are manufactured into garments and field tested. The field test evaluates aesthetic or other physical characteristics that may not have showed up earlier and at the same time acts as a check on laboratory evaluations.

These exhaustive evaluations provide the data on which fiber producers can base a recommendation for the minimum blend label (for example, 55-45 Dacron-wool) that will provide maximum fabric performance. These blend levels necessarily vary depending on the applications and requirements of a specific blended fabric.

## GROWING FAST

In 1957 blend fabrics amounted to 15% of the total production. By 1959 the production of blends had increased to 24% of the total market.

If the polyester blends are any indication, the use of blends will increase at an even faster pace during 1961 and 1962. During the first quarter of 1960 polyester blends totaled 63-million linear yards compared to 38-million yards in the same period of 1959. This is a 66% increase. During the second quarter of 1960 polyester blends totaled 59-million yards compared to 38-million yards in the same period of 1959 – or 55% more.

The polyester-blend production for the first half of 1960 is broken down as follows:

| Type of Fabric | Millions of Linear Yards (Jan.-June 1960) |
|---|---|
| Polyester/cotton | 73 |
| Polyester/wool | 14 |
| Polyester/rayon | 10 |
| Polyester/nylon | 2 |
| Polyester/other fibers | 23 |
| Total polyester blends | 122 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vycron | | X | | | | | X | | | | | |
| Wool | X | | X | X | | | | X | | | | |
| Zefran | X | X | | | X | X | | | | X | X | X |

## Man-Made-Fiber Production and Planned Capacity for the United States

| | | | Production (millions of pounds) | | | Capacity by December 1961 |
|---|---|---|---|---|---|---|
| | | | 1958 | 1959 | Jan.-June 1960 | |
| Rayon and acetate | Filament Yarn | | 635.7 | 737.7 | 351.0 | 834.0 |
| | Staple | Rayon | 324.2 | 359.1 | 159.6 | 533.0 |
| | | Acetate | 62.0 | 71.0 | (Not available) | 88.0 |
| | Total | | 1,021.9 | 1,167.8 | 510.6 | 1,455.0 |
| Noncellulosic* *Does not include glass fibers | Yarn | | 320.0 | 412.1 | 218.2 | 726.0 |
| | Staple | | 170.5 | 233.2 | 133.1 | 419.0 |
| | Total | | 490.5 | 645.3 | 351.3 | 1,145.0 |
| All man-made | Filament Yarn | | 955.7 | 1,149.8 | 569.2 | 1,560.0 |
| | Staple | | 556.7 | 663.3 | 292.7 | 1,040.0 |
| | Total | | 1,512.4 | 1,813.1 | 861.9 | 2,600.0 |

## HOW TO USE THE FIBER-BLEND CHART

This chart is designed as a ready reference guide to today's commercial blends of man-made and natural fibers. The data in the chart represent prevailing practices and the most common procedures used to handle these blends. The chart makes no attempt to enumerate every specific blend now available commercially. Such a list would be unnecessary because the blends listed in a given range are processed similarly.

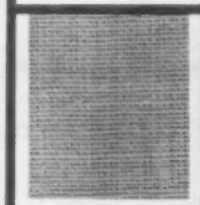
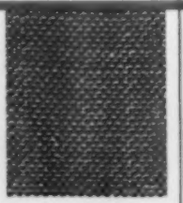
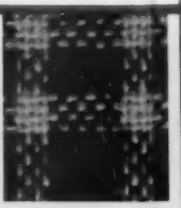
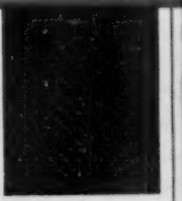
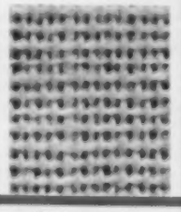
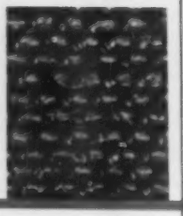
The trade names listed (under generic headings) are fibers that are produced commercially in the United States. The rayon classifications include the regular rayon staple and the new modified rayon staples — such as cross-linked and high-wet modulus. But these modified rayon fibers are new to the market and do not have across-the-board applications. The nylon staple can be either Type 6 or Type 6, 6.

The listing for finished width indicates a rather wide range. This is a result of the industry's trend to wider looms. But the majority of the blended fabrics for each classification is produced in commercial widths.

As indicated, many of the fibers are blended as staple. Although weight-blending systems are not considered essential, the mills find such systems help obtain a high-quality blend — homogeneous and accurate. The results are uniform fiber distribution throughout the fabrics and accurate blend percentage in conformity with the fabric-labeling requirements.

# TEXTILE WORLD'S FIBER-BLEND C

Compiled by T. Benton Sevison, Jr., Associate Editor, TEXTILE WORLD

| Man-made-fiber: Generic name | | POLYESTER | | | | ACRYLIC | | |
|---|---|---|---|---|---|---|---|---|
| Trade names (U.S.A. only) | | DACRON, FORTREL, KODEL, VYCRON | | | | ACRILAN, CRESLAN, ORLON | | |
| Blended with: | | COTTON 35 to 50% | WOOL 45 to 55% | RAYON 35 to 50% | ACRYLIC 45 to 55% | WOOL 30 to 50% Worsted | Woolen | WOOL 25 to 35% |
| Major use | | Shirting | Suiting | Dresswear | Suiting | Dresswear | Women's sportswear | Suiting |
| Typical fabric construction: Magnified 2 times | |  | |  | | |  |  |
| Magnified 7 times | |  | |  | | | | |
| Other uses | | Dresswear, blouses, sportswear | Dresswear | Blouses, shirting, slack fabrics | Dresswear | Suiting, slack fabrics, sportswear | Slack fabrics, suiting, coating | Dresswear |
| Warp | Yarn number | 26s to 50s | 20s to 22s | 20s to 40s | 25s to 30s | 2/40s to 2/70s | 2 to 8 run | 14s to 18s |
| | Ends/inch | 88 to 125 | 58 to 62 | 64 to 72 | 70 to 74 | 48 to 52 | 40 to 48 | 56 to 60 |
| Filling | Yarn number | 26s to 50s | 20s to 22s | 20s to 40s | 25s to 30s | 2/40s to 2/70s | 2 to 8 run | 14s to 18s |
| | Picks/inch | 54 to 72 | 50 to 54 | 54 to 62 | 52 to 56 | 42 to 46 | 32 to 40 | 44 to 48 |
| Finished weight (oz./sq. yd.) | | 3.0 to 4.5 oz. | 4.0 to 6.0 oz. | 3.0 to 4.5 oz. | 3.5 to 4.0 oz. | 3.5 to 6.0 oz. | 5.0 to 7.0 oz. | 4.5 to 5.0 oz. |
| Finished width | | 39 to 50 in. | 62 to 64 in. | 39 to 50 in. | 62 to 64 in. | 58 to 60 in. | 56 to 60 in. | 58 to 64 in. |
| Weave | | Plain | Plain; 2/2 twill | Plain; 2/2 twill | Plain; 2/2 twill | Plain | Plain | Plain |
| Spinning system used | Cotton | Yes | Yes | Yes | Yes | No | No | Yes |
| | Worsted | No | Yes | No | Yes | Yes | No | No |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| system used | Worsted | No | Yes | No | Yes | Yes | No | No |
| | Woolen | No | No | No | No | No | Yes | No |
| Where is blending done? | | Drawing | Stock | Stock or drawing | Stock | Drawing | Stock | Stock |
| Is combed yarn used? | | Yes | No | No | No | Yes | No | No |
| Can yarn be spun direct to filling bobbins? | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Are warps sized? | | Yes | Yes | Yes | Yes | Yes | No | Yes |
| Are fabrics woven? | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Type of loom used | Single-shuttle | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Multi-shuttle | Yes | Yes | Yes | Yes | Yes | Yes | No |
| | Comments | Filling mixing helpful | | Filling mixing helpful | | | | |
| Are fabrics knitted? | | No | No | No | No | No | No | No |
| Type of knitting equipment used | Warp | No | No | No | No | No | No | No |
| | Circular | No | No | No | No | No | No | No |
| Are fabrics bleached? | | Yes | No | No | No | No | No | No |
| Where is blend dyed? | Stock | No | Yes | No | No | No | Yes | No |
| | Top | No | Yes | No | No | Yes | No | No |
| | Yarn | Yes | Yes | Yes | Yes | No | Yes | No |
| | Piece — Open width | Yes | Yes | Yes | Yes | No | Yes | No |
| | Piece — Rope | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Piece — Burlington | No | Yes | No | No | No | No | No |
| What is dyeing procedure? | Normal | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | High-temp. | No | No | No | No | No | No | No |
| | Carrier | Yes | Yes | Yes | Yes | No | No | No |
| | Thermosol | Yes | No | No | No | No | No | No |
| What types of dyes are used? | | Vat, disperse, azoic, direct, reactive | Acid, azoic, disperse, premetalized | Vat, direct, azoic, reactive | Cationic, disperse | Acid, premetalized, disperse | Acid, premetalized, disperse | Acid, premetalized, disperse |
| Fabric characteristics and how they are obtained | | Dimensional stability is obtained by compressive shrinkage and heat setting. Wash-and-wear qualities are inherent in the blend. Resins may be used to build hand. | Goods are dried on tenter frames with over-feeding equipment and heat setting to obtain dimensional stability. These fabrics have inherent resistance to wrinkling. | Dimensional stability is obtained by resin-treating, heat-setting and/or compressive-shrinkage procedures. Wash-and-wear qualities are inherent when polyester content is high. Resins may be used to build hand. | These fabrics are dimensionally stable when finished on slack dryers or over-feed tenter frames. Heat setting improves inherent wash-and-wear qualities. Resins may be used to modify hand. | Dimensional stability is obtained by over-feed tenter frames or slack dryers and controlled-tension tenters. Wash-and-wear qualities depend on processing and acrylic-fiber content. | Maximum fabric stability properties are obtained by slack dryers and controlled-tension tenter frames or over-feed tenters. Blends that contain the higher percentages of acrylic fiber have good wash-and-wear qualities. | Dimensional stability is obtained by drying on over-feed tenter frames or slack dryers and controlled - tension tenters. Wash-and-wear qualities depend on processing and acrylic-fiber content. |

# D CHART–1961

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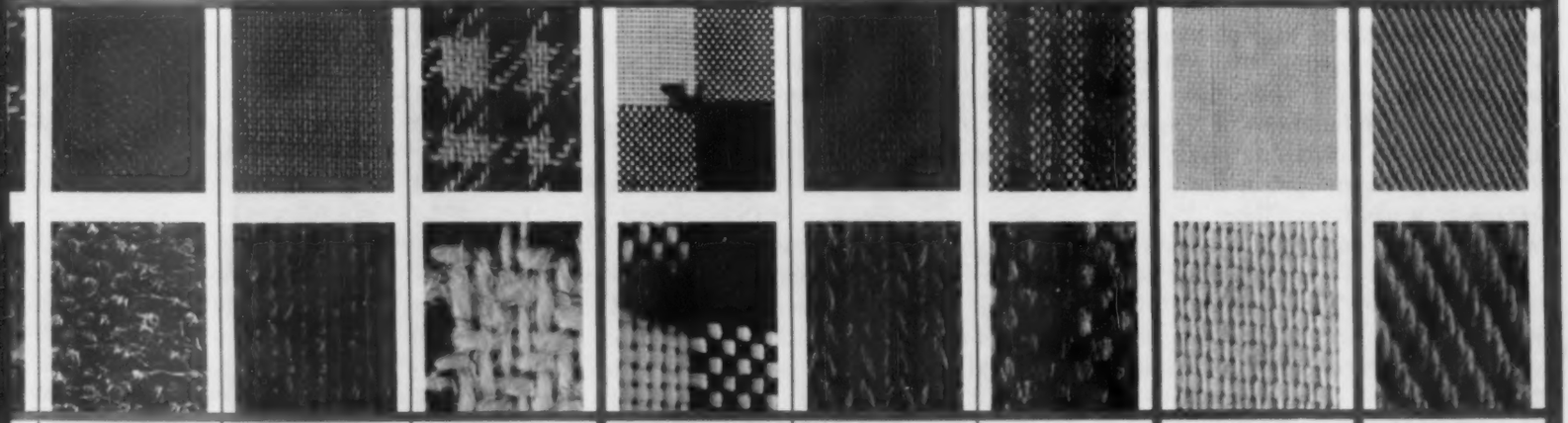
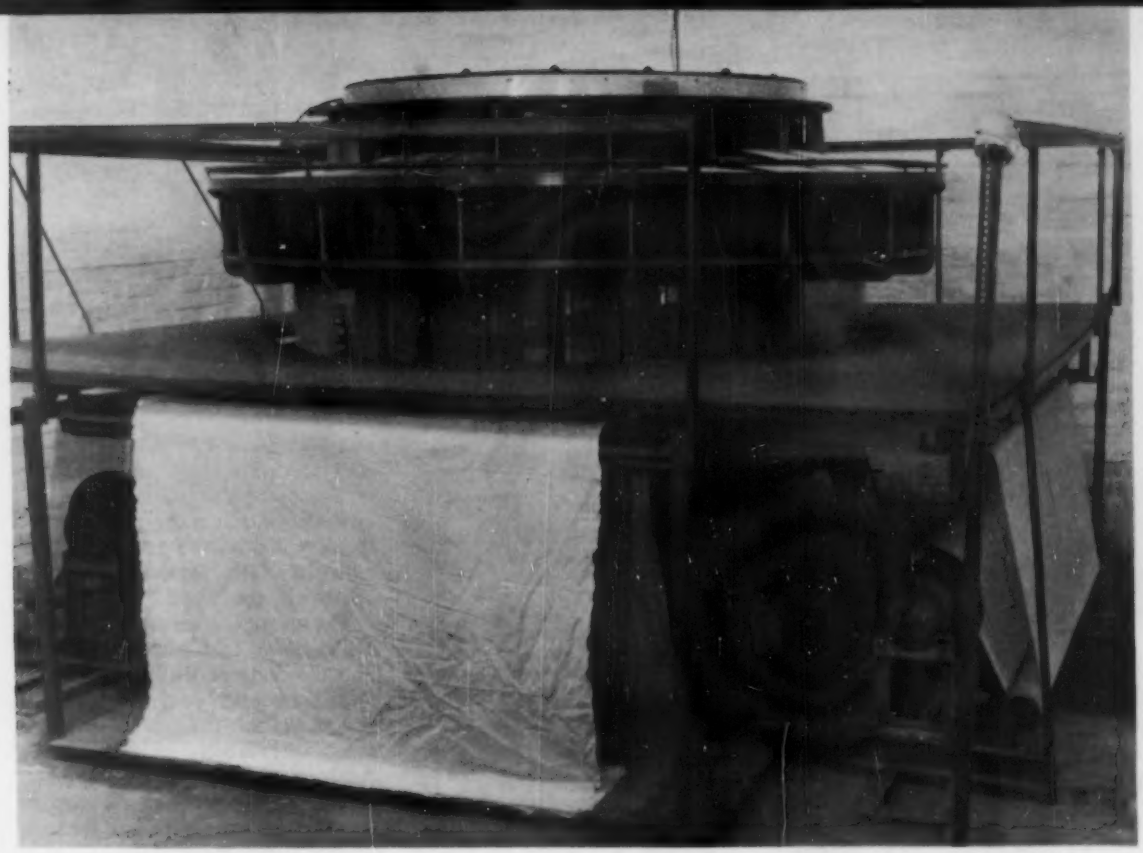
| ACRYLIC | | | RAYON | | | ACETATE | NYLON |
|---|---|---|---|---|---|---|---|
| CRESLAN, ORLON, ZEFRAN | | | | | | | |
| WOOL 25 to 35% | RAYON 30 to 50% | COTTON 20 to 30% | TRIACETATE 50 to 70% | COTTON 40 to 68% | ACETATE 30 to 50% | COTTON 30 to 50% | COTTON 15 to 20% |
| Suiting | Dresswear | Women's sportswear | Dresswear | Dresswear | Slack fabrics | Dresswear | Work-clothing fabrics |
|  | | | | | | | |
| Dresswear | Sportswear, slack fabrics, boys' wear | Knitwear, T-shirting | Sportswear, slack fabrics | Knitwear, T-shirting | Sportswear, rainwear | Sportswear, blouses | Sheeting |
| 14s to 18s | 14s to 20s | 30s to 50s | 14s to 16s | 30s to 40s | 20s to 40s | 20s to 40s | 14s to 22s |
| 56 to 60 | 45 to 75 | 48 to 60 | 45 to 83 | 80 to 100 | 55 to 130 | 80 to 100 | 100 to 115 |
| 14s to 18s | 14s to 20s | 30s to 50s | 14s to 16s | 30s to 40s | 20s to 40s | 20s to 40s | 14s to 22s |
| 44 to 48 | 34 to 58 | 44 to 56 | 34 to 65 | 66 to 88 | 44 to 60 | 55 to 70 | 42 to 48 |
| 4.5 to 5.0 oz. | 4.5 to 6.5 oz. | 4.5 to 6.0 oz. | 4.5 to 8.0 oz. | 2.5 to 4.5 oz. | 5.5 to 7.5 oz. | 3.0 to 5.5 oz. | 8.0 to 10.0 oz. |
| 58 to 64 in. | 44 to 46 in. | 44 to 46 in. | 44 to 46 in. | 39 to 50 in. | 44 to 46 in. | 44 to 46 in. | 44 to 46 in. |
| Plain | Plain; 2/2 twill | Plain; 2/2 twill | Plain; 2/2 twill | Plain | Plain | Plain | Plain; 3/1 twill |
| Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| No | No | No | No | No | No | No | No |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | No | No | No | No | No | No | No | No |
| | No | No | No | No | No | No | No | No |
| | Stock | Stock | Drawing | Stock | Stock or drawing | Stock | Stock or drawing | Stock |
| | No | No | Yes | No | Yes | No | Yes | No |
| | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | No | Yes | Yes | Yes | No | Yes | Yes | No |
| | | | | Filling mixing helpful | | Filling mixing helpful | | |
| | No | No | Yes | No | Yes | No | No | No |
| | No | No | No | No | No | No | No | No |
| | No | No | Yes | No | Yes | No | No | No |
| | No | No | Yes | No | Yes | No | Yes | Yes |
| | No | Yes | No | No | No | No | No | No |
| | No | No | No | No | No | No | No | No |
| | No | Yes | Yes | No | No | Yes | Yes | No |
| | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | No | No | No | No | No | No | No | No |
| | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | No | No | No | No | No | No | No | No |
| | No | No | No | No | No | No | No | No |
| | No | No | No | No | No | No | No | No |
| | Acid, premetal-ized, disperse | Acid, direct, disperse | Vat, direct, azoic, premetalized | Disperse, direct, vat | Direct, vat, reactive | Direct, vat, reactive, disperse | Direct, vat, disperse | Vat, reactive, disperse, acid, direct |
| abric oper- ained ryers olled- enter aver- nters. con- higher s of have n-and- ies. | Dimensional stability is obtained by drying on over-feed tenter frames or slack dryers and controlled - tension tenters. Wash-and-wear qualities depend on processing and acrylic-fiber content. | These fabrics may be resin treated to obtain dimensional stability. Low-tension drying procedures are necessary. Wash - and - wear properties are obtained but the lower-percentage acrylic blends require resins. | Dimensional stability is obtained through compressive shrinkage. When properly finished these fabrics have inherent wash-and-wear qualities. Resins are used to build hand. | Resins are used to improve dimensional stability of the rayon component. Wash - and - wear qualities are obtained by heat setting. Resins may also be used for hand. | Dimensional stability is obtained from compressive shrinkage. Wash-and-wear qualities are obtained by resin treatment. | Dimensional stability is obtained by resin treatment of the rayon component. Resins are also used for building hand. | Normal compressive - shrinkage procedures can be used to produce satisfactory stability to laundering. Resins may be used to improve dimensional stability and build hand. | Dimensional stability is obtained from compressive shrinkage. |



CIRCULAR LOOM works either of two ways: It weaves several pieces of cloth at once—each with a leno selvage. Or using all eight shuttles, it weaves one circular piece of cloth at 320 ppm.—more fabric than eight conventional looms could produce.

# This Loom Sets a Fast Pace

*It's circular. It's fast. It will weave over half of all types of fabrics woven today. It could make a big difference in your profits.*

THAT'S a new circular loom you see in the photo above. It's called the Dautricourt CWM (circular weaving machine). Safety Research Services Ltd., is now demonstrating it in Yorkshire, England. Its developers say the CWM will . . .

- Run easily at 320 ppm.
- Turn out more fabric than eight conventional looms.
- Weave over half of all types of cloth now produced, with a range from coarse to very fine yarns.
- Produce fabrics from a variety of natural and man-made fibers.
- Increase profits where raw materials are cheap, labor costs high.

By SEFTON S. SAMUELS, Associate Textile Institute, Yorkshire, England

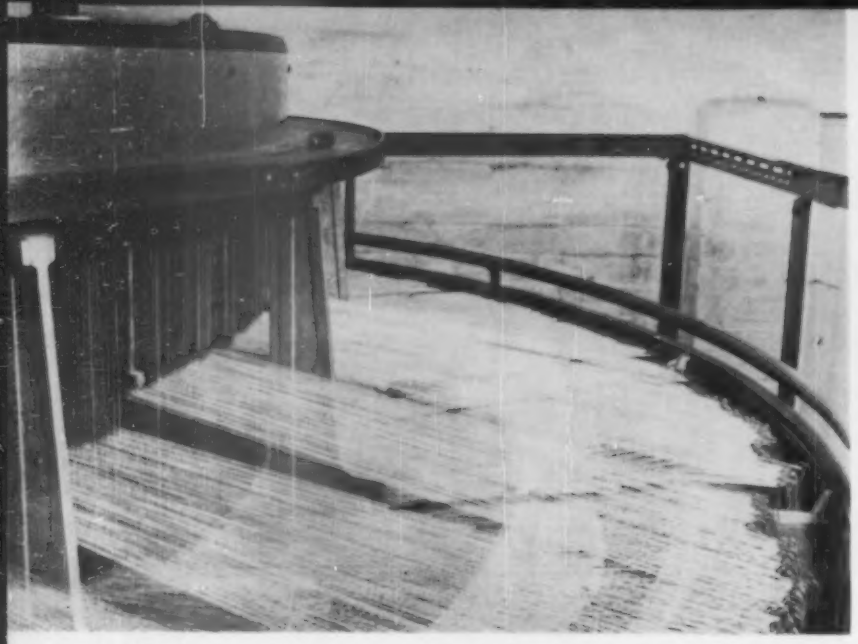
Four of the CWM's are now working at a Belgian jute and cotton mill. In fact, shortly after the Suez Canal crisis in 1956 the mill used these looms to produce a large order of refugee blankets for the United Nations.

The CWM is versatile. It will weave fabrics from cotton, jute, asbestos, wool, linen, and man-made fibers—from the filmiest fabrics to heavily built sailcloths—in most of the common designs. It will weave cotton sheetings and sailcloths up to the average weight—and other cotton cloths 15% above the theoretical maximum weight. And it will weave wool fabrics from yarn with little twist and low strength. Some of these last fabrics have been napped. Such diversification points up the versatility of this new loom.

## EIGHT TIMES AS MUCH

With the new loom you weave the cloth in a circle. You weave several pieces of fabric together in normal width and separate them before they come from the loom. Each piece has a strong leno selvage, which serves well in dyeing and finishing operations.

*. . . Turn the page*



HARNESSES of the circular loom are much like those of a conventional loom. Warp ends pass through the compensating springs at right to the harnesses at left.

## FAST-PACE LOOM . . . *Begins on page* 51

The CWM uses up to eight shuttles at once, each shuttle revolving at 40 rpm. Each shuttle runs for about an hour, inserting filling at 1,760 yards per minute around the maximum weaving circumference of 200 inches. At normal speed of 320 ppm. at 40 rpm. cylinder speed with these eight shuttles, the loom produces eight times as much fabric as a conventional loom. Here's how it figures:

Dautricourt CWM—Five pieces woven together at 320 ppm. Conventional loom—one piece of cloth woven at 200 ppm.

$$\frac{320 \times 5}{200 \times 1} = 8 \text{ conventional looms}$$

One weaver can tend four to six circular looms. The machine is 7 feet high. The weaver works on a platform 4 feet above the floor.

### DESIGN MADE SIMPLE

The CWM runs smoothly—almost silently. And because it's simple in design and operation, training weavers is no problem.

Each warp end is tensioned individually to compensate for strain during shedding and beating up. Therefore faults such as filling bars, warn-yarn breaks, and reediness are eliminated.

The loom is powered by a 5-hp. motor that drives (through a hydraulic coupling) the main shaft and sprocket wheel to a large cylinder. This cylinder is the only basic moving part of the machine. It controls lifting the harnesses, moving the shuttles, and beating up.

Harnesses are much like conventional ones. They are arranged in groups according to the warp set. Cam followers, guided along specially raised cam tracks on the outside of the cylinder, lift the groups of harnesses. The followers are fully sealed lifetime-greased bearings.

The harness-lifting motion is all in one piece. It's positive in action.

Harnesses are positioned so that they can be timed with little movement when top and bottom sheds cross to insure minimum friction of warp ends. The reed is immobile—acts only as a separating comb for the warp ends. It does not beat up the filling. It is replaced when warp sets are changed, but reed changes are not as critical as for a conventional loom.

Each of the eight shuttles is driven by two-gear wheels. The first is attached to the moving cylinder, has special-shaped teeth, and is positively driven. These special-shaped teeth are meshed with the warp ends, which pass unharmed between the shuttle drive's gear wheels.

The first gear wheel drives the second gear wheel, which is attached to the shuttle. In this way, the shuttle is pushed along its track at a constant speed.

### CONTROLS BUILT IN

An antenna attached to the shuttle carriage lays the filling yarn close to the fell of the cloth at the rear end of the shuttle. A large revolving disk following the shuttle and fastened to the top of the revolving cylinder beats up the filling. Since the disk is driven merely by contact with the cloth, friction during the beat-up is minimized.

The outer surface of this disk is a flat spring that pushes the filling into the body of the cloth. Beating up is done at the center of the shed. Because of this feature, the machine can weave fabrics well above the maximum theoretical set.

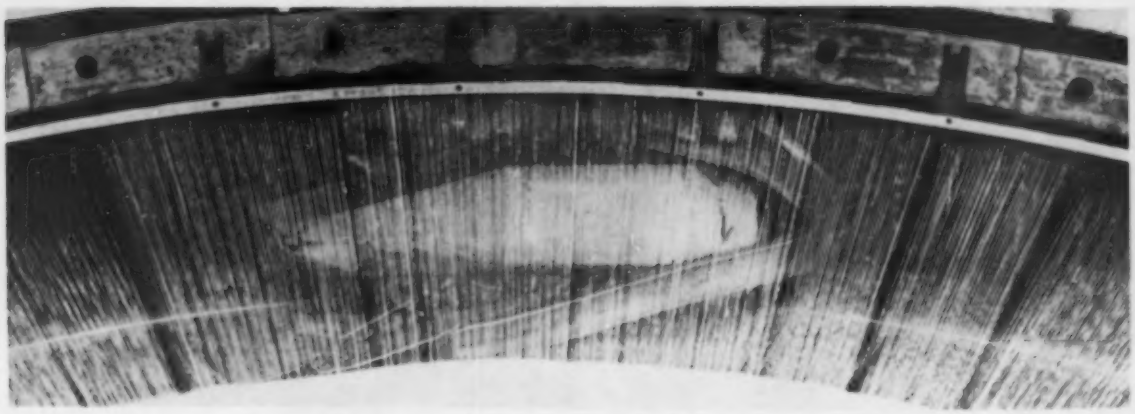
As the filling leaves the cop in the shuttle box, it passes through a tensioning device, which is one or several weighted disks depending on the required tension. Then the filling goes through a filling feeler, which is part of the filling stop motion. At filling breaks, a powerful servo brake stops the loom almost immediately. A small red lamp in the shuttle box lights up at stops to indicate the shuttle that has the broken filling.

From the feeler the filling passes over two rolls several times to form a reserve of about 3 yards of yarn. This way, filling insertion continues until the loom stops, and mispicks are thus avoided.

### CONSTANT TENSION

The warp let-off is basically a negative motion. The warp beam is positioned at both ends on two rolls that turn freely. The beam is not weighted. The warp yarn is pulled from the beam by the roughened surface of a constant-diameter variably driven roll. This roll is rotated by the pressure of the warp shed on a tension bar the warp passes over. Therefore tension is constant during letting off. Also there's less chance of filling bars caused by changes in humidity.

Another great advantage of the constant-diameter roll is that



SHUTTLE in the warp shed (one of eight) is driven by two gear-wheels. The shuttle lays the filling close to the fell of the cloth to reduce friction at the beat-up. Large revolving disk follows the shuttle, beats up the filling.

changes in the diameter of the warp beam as the yarn is drawn off (and therefore changes in tension) are of no consequence. As a result, larger warp beams are used. From two to four yarn beams can be installed around the loom to increase the yarn supply and to reduce the frequency of warp replacement.

Every warp end is tensioned individually by a long steel-wire spring. Warp ends pass through a guide at the top, then go directly to the harnesses. This spring is much like a horizontal reed. It moves gently backward and forward to compensate for tension variations. In addition, it reduces strain on warp ends during shedding and beating up.

A warp-stop device is also part of this mechanism. When one end breaks, the tension wire springs back until it's stopped by a contact bar. This action completes an electric circuit to stop the loom instantly. At this same time one of 16 red indicators around the loom lights up to show the location of the broken end.

As the cloth is woven, it passes over an inner weaving ring a short distance from the fell of the cloth. Maximum pieces of cloth are woven around this ring according to the width of the cloth (measured as "gray cloth" and not "reed width"). Larger rings can be replaced with smaller ones to eliminate long filling tails between pieces of cloth when making two or more fabrics.

Unless you want tubular cloth, you can lock together one or more ends at both cloth selvages in a leno weave to form a strong selvage at any place around the ring.

The cloth passes from the weaving ring to the bottom of the loom, where the filling between each of the pieces of fabric is cut automatically between wheels, one of which is toothed. Cloth then goes over a guide roll to the take-up rolls or is laid onto a scray. A reduction gear at the lower end of the main shaft drives the take-up rolls and the pick-change wheel.

Filling packages are much larger than conventional packages and are coreless. Unwinding is very even. Packages run for about an hour. Net yarn weights per package are: asbestos, 8 pounds; jute, 4½ pounds; waste cotton or wool, 4½ pounds; cotton, man-made fibers, worsted, and linen, 14 ounces.

Greater profits with the loom come from weaving fabrics containing cheap raw materials and in doing the job in areas where labor costs are high.

INVENTOR, Jean Dautricourt, a former Belgian lawyer, gave up his law practice and has worked on the loom for 14 years. Signal lamp (arrow) tells when a warp end breaks. Loom stops instantly if warp end breaks.

TOP MEN W. W. Sledge and G. A. Cralle get together for 10 minutes before lunchtime each day in their joint office to check developments. They follow this checkup with a luncheon conference at a reserved table in the local hotel.

# These Men Manage Modernization

*The plant they run is the oldest women's hosiery mill in the south. But with alert management and bold decisions they keep it up to the minute. Right now they're spending over $1-million to break into a new field.*

THAT MAN at the left in the photo above is William Whitfield Sledge. The man at the right is George A. Cralle. Sledge is president and a director of Durham Hosiery Mills, Durham, N. C. He's a specialist in money management. Cralle is vice president and secretary.

These two men, together with a small nucleus of fellow officers and management men, make and carry out the decisions that keep Durham Hosiery Mills strong and profitable today. Within the last few years, in line with these decisions and under Sledge's leadership, the company has done the following:

- Brought in a big battery of modern full-fashioned hosiery machines.
- Modernized its building, which dates back to 1918.
- Air conditioned the entire mill.
- Revamped other plant services.

Now, facing a declining full-fashioned market, the company has made (and is now effecting) a bold decision: to invest heavily (over $1-million) in seamless-hosiery machines.

## MEN TO RECKON WITH

Take a closer look at Sledge and Cralle, see how they complement each other and work together as a management team.

Sledge is a specialist in money management. He's also knowledgeable about mill management and textile markets. He has been president of Durham Hosiery since 1942, a director since 1930. In fact, he's a director of more companies than he can easily remember. But this company has a special place in his heart. He pulled it back from the brink of receivership, forged it into a profitable organization. That's why, in spite of his other business commitments, he gives it a substantial part of every working day —an office conference with Cralle, plus a luncheon conference with Cralle at a regularly reserved table in the local hotel.

Cralle, the "Mister Inside" at the mill, is a knitter from the inside out. His father owned a knitting mill, and the son has spoken knitter's language from the start. He's a graduate of North Carolina State College—a knitting major.

From State, Cralle went to Burlington Industries. There he started at the bottom on day jobs, became a knitter, then an apprentice machine fixer. Later Burlington transferred him to another mill as head of quality control.

From Burlington, Cralle moved

into Durham Hosiery's New York sales department, then to Durham as executive vice president and secretary. He heads up the manufacturing operations today.

## MANAGED MODERNIZATION

How does this Sledge-Cralle team work?

In the last year and a half Durham Hosiery has spent over $1-million on seamless-hosiery machines and auxiliary equipment. All this money has come out of company earnings. This big capital outlay follows close on the heels of an eight-year period during which the company modernized its old building and installed new full-fashioned hosiery machines.

The building is in the heart of the city of Durham. This location is not really a liability. On the contrary, it's an asset. Sledge says: "Here in the city it's easier to hire and keep the best young workers—women in particular—who form the great majority of hosiery-mill workers wherever you go."

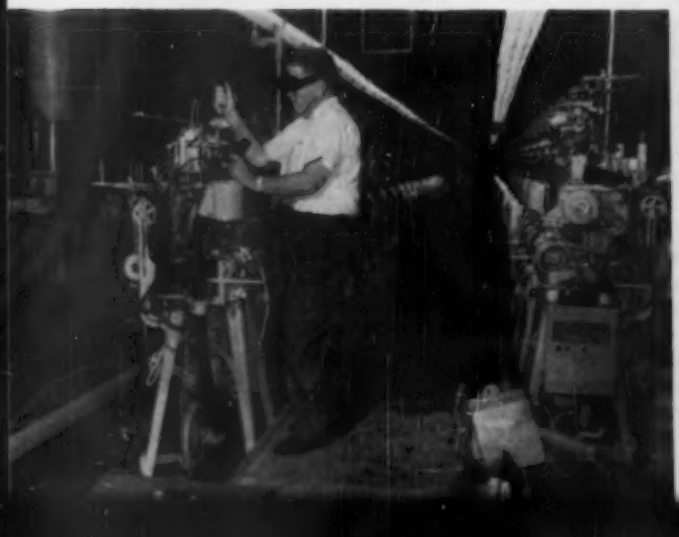
**Strong to start with**—The five-story building has 158,000 square feet of usable floor space divided equally among the five floors. It was first built in 1918. Construction throughout is thick, heavily reinforced concrete and steel. How strong is it? In the early 1950's the company modernized with installation of 36 full-fashioned hosiery machines, each weighing 18 tons. With approval of J. E. Sirrine Co., Engineers, who had designed the building originally, these machines were placed on the two top floors. Result: no excessive vibration, no overloading of floors.

**Better light, better air**—To make the building as modern as possible the company removed the old full-size windows, partially bricked up the openings, and thus made way for smaller Thermopane windows. In addition, it installed fluorescent

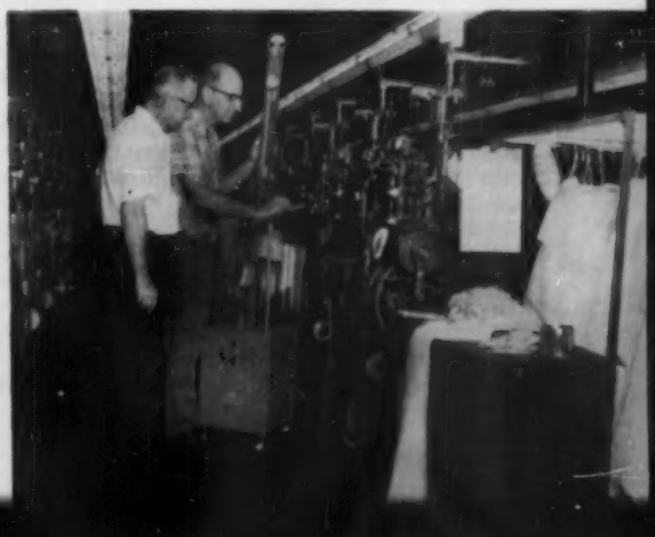
KNITTER patrols her alley, continuously inspects quality on new seamless-hosiery machines. This battery of machines is part of 204 machines installed in 1959.

LEARNER-KNITTER gets training from experienced knitter on newest machines now being installed. Young fixer in the background is on his first production job.

ERECTOR adds the 35th brand-new machine to be put on the production line in 1960. At first only 10 new machines came in each month. Now it's 20.



SUPERVISOR of second shift in knitting room gets instructions on the new instrument for measuring seamless hosiery—another step in the mechanization of quality control.



LOOPER-LEARNER takes a day off from the local vocational school to observe an experienced looper. Average training time is 17 weeks including five weeks in school.

GRAY INSPECTOR makes final check on seamless stockings before they go to third-floor finishing department. Inspecting machines handle 150-doz. pairs for 8-hr. shift.

**MODERNIZATION** . . . *Begins on page* 54

lighting throughout the mill. The original central air-washing system, along with the original main-duct system, was revamped into a central refrigeration system for the entire mill. This modernization move was done by Carrier Corp., which had installed the original system.

### TIME FOR DECISION

Then, in mid-1959, with modernized building and modern full-fashioned knitting machines, Sledge found his company in a peculiar position. The market was flooded with full-fashioned stockings. Some mills were closing, raw-material prices were higher, and the company faced the prevailing wage rate in Durham—the highest in the state.

Sound grim? Sure does.

But the company was in good financial condition. Sledge, money-management expert, had seen to that. In addition to the building (carried on the books at almost $2-million), current assets were $1.6-million; current liabilities, $276,737. There was no long-term debt, no mortgage. What's more, the company had paid a dividend every year since 1942—a record to inspire confidence.

The company also had a $500,000 unsecured credit line with each of three New York banks and one Durham bank, plus a strong factoring arrangement (with William Iselin & Co., Inc.) that has lasted for 27 years of ups and downs. (Sledge leans toward strong and continuing business associations, as shown by his 40 years with J. E. Sirrine, Carrier Corp., and many of his customers. He has also banked for 27 years with Durham Bank & Trust Co., Bankers Trust Co., and Morgan Guaranty Trust Co.)

As a manufacturer of unbranded hosiery, the company had developed a nationwide reputation for high-quality hosiery and had carried several customers on its books since it opened for business in 1920.

If Sledge felt pretty secure on the financial and customer-relations sides, he also felt well off on the labor side. Since Durham is a strong industrial city with the highest wage scale in the state, high productivity is vital. The mill's union, like its management, accepts this fact of life. Indeed, the union had already signed a wage agreement that opened the way to installation of still more productive equipment in the mill.

One more thing: Sledge could see that productive efficiency was about as high as it could go for a while. In other words, no more labor savings in sight—not in the immediate future, anyhow. Only place where further savings seemed possible: the company's preferred stock. The company bought in over $100,000 of this stock to solidify its financial position.

### THE BIG PLUNGE

With all factors for decision now out in the open, Sledge moved. His decision: Since the market for full-fashioned hosiery was shrinking, get into the seamless-hosiery business.

In 1959, 204 Scott & Williams single-feed seamless hosiery machines (photo, p. 55) were installed. Floor space was ample for the new machines, even though the modern full-fashioned machines remained in place. (These full-fashioned machines have been written off—but are still producing and will stay.)

This year (1960), 120 Reading-Booton twin-feed seamless machines (photo, p. 55) are being added. At this writing (October) 35 machines are already in place and others are being installed at the rate of 20 per month. There are also three new Singer-Fidelity dual-feed seamless machines on the production floor for observation (cylinder diameter of 3¾ inches, 400 needles, speed of 190 rpm).

Following a three-month study recently made, new equipment costing $10,000 for preboarding has been

ordered. A new Volumet instrument (photo, p. 55) for measuring seamless hosiery is also being put into production.

All Scott & Williams machines are single feed with 400 needles. The first 30 machines installed are 3½-in. diameter; the other 174, 3¾-in. diameter. Durham Hosiery added automatic thread trimmers. Speed is 189 rpm. Production is a little over three stockings per machine per hour.

Knitters have 34 machines. Thus there are 18 knitters on three shifts. Fixers have 68 machines, with nine over-all fixers on three shifts. In addition, there's a head fixer on the first shift only.

Reading-Booton machines are twin-feed, 3¾-in. cylinder, 400-needle machines with fully automatic vacuum takedowns. All machines have automatic thread trimmers. Speed is 185 rpm. Production per machine is over five stockings per hour.

**Job loading, job training**—Right now knitters are running all 35 machines installed. Very likely each knitter will have 30 machines when all machines are in place. But this figure may be altered either up or down depending on how well machines run after they've settled down.

Knitters are trained in the mill by putting learners with experienced knitters. Within the past 1½ years, six knitters have been trained on Scott & Williams machines. For the new Reading-Booton machines, six knitters have already been trained and more trainees are being added.

Before knitter trainees are hired they are sent to the local U. S. Employment Service for aptitude and dexterity tests by General Aptitude Test Batteries (GATB).

Fixer training is handled in much this same way. But there is a head fixer who spends much of his time training young fixers. Four fixers are being trained at present. Three are being retrained from other types of machines, and one is completely inexperienced.

Yarns used in seamless hosiery are throwster's nylon—*Welt and afterwelt*: 50-den., preshrunk, 7 tpi., S-twist. *Leg and foot*: 15-den., monofilament, no twist. *Heel and toe*: 50-den. (not preshrunk), 7 tpi. Z-twist. Wrap yarn is 100/2 cotton.

**Full-fashioned going strong**—George Cralle is proud of his newest full-fashioned machines. And even though the full-fashioned market is now declining, he is operating these two Reading automatic, R-100, 60-gage, 30-section machines 143 hours per week. Knitters run two machines. Speed is 100 courses per minute. Output per knitter is 4 dozen stockings per hour.

Other Reading full-fashioned machines fill much of the fourth and fifth floors. There are eight 60-gage, 30-section machines running 86 courses per minute. And there are 22 51-gage, 30-section machines also running 86 courses per minute. Knitters on both types of machines run two machines.

Eight older machines are 45-gage (24 sections) and run 70 courses per minute. Knitters have four machines to run.

For full-fashioned machines, there is one fixer per shift on each of the fourth and fifth floors for a total of two fixers per shift for 40 machines in operation.

At Durham Hosiery all seamless stockings now are looped (photo, p. 56). But other toe-enclosure methods are being studied. The 40 looping machines are being run two 9-hr. shifts each day. Average output per looper is 105 dozen stockings per 40-hr. week.

**More training**—The mill is conducting an extensive and successful looper-training program cooperatively with the local state vocational school. Applicants accepted are between the ages of 18 and 37, because looping takes a quick hand and sharp eye. Applicants selected spend five weeks at the school. One day a week during this period is spent at the mill, where the applicant observes an experienced looper. At the end of five weeks she is brought to the mill.

Training time for a trainee can be as low as six to eight weeks for a few exceptional girls. But on averages it's 17 weeks before a girl meets production standards.

## QUALITY FIRST

All stockings, both seamless and full-fashioned, are inspected on Inspectormatic machines. There are 10 machines—six are used for seamless inspection, four for full-fashioned. The newest machine has just been put into production.

Production per machine is unusually low, according to Emmett T. Lee, gray-goods foreman: 150 dozen per machine per 8-hr. shift on seamless, and 140 dozen on full-fashioned. Mr. Lee says production is deliberately being held down to insure high-quality output. First-quality stockings on the 31 Reading-Booton machines now run at 91%. But this figure will improve as soon as machines settle down.

Most dyeing and finishing machines are conventional. Only unusual machine is a Smith-Drum conveyor-type dryer that handles 170 dozen pairs of hosiery per hour.

## BETTER PLANT SERVICES

With new machines and equipment in position in the adequate floor space, the only obstacle in Durham's profit path is its multi-floor structure. And that isn't a serious obstacle. All goods are moved from one to another of the five floors.

With all knitting on the fourth and fifth floors, gray stockings are moved on trucks in 10-doz. lots to the second floor for seaming or looping, inspecting and preboarding. Then they are taken to the third floor, where they're put in graygoods stock. As stockings are needed, they're taken to the dyehouse on the first floor. Finally, they're finished and shipped from the third floor of the plant.

The 250-ton-capacity Carrier air-conditioning unit controls atmosphere in the entire building: in the knitting room, 50 to 52% r.h. and 80 F.; in finishing, 78 to 80 F., no humidity control.

The mill operates two Babcock & Wilcox 240-hp. boilers. Each boiler produces 17,900 pounds of steam per hour. Boilers are coal-fired with Type-E hydraulic stokers. Eight pounds of steam is produced from each pound of coal.

Boilers and air-conditioning unit are on the first floor of the building. General offices are also on this floor at the street level. Durham makes its own shipping boxes and prints its own materials on this floor of the mill.

# Now—a New Way To Control Neps in Cotton

*Linear differences and individual-fiber strength have a direct relation to nep production. Here's a different approach to the nep problem that may help you clean at the right speed—and produce better-looking yarn.*

A FINE-FIBERED COTTON can theoretically put up to ¼-million neps in a pound of card web if the stock is opened and cleaned too fast. But by studying the fineness characteristics of cotton, you can get maximum cleaning efficiency without breaking and tangling the fibers.

It's standard practice to watch out for gin-damaged, wet, or curled cotton, which are among the big causes of neps. But too few mill men associate neps with fineness. Fineness causes neps because the fibers are weak and there are more of them to become damaged.

Let's look at a 6.0 Micronaire cotton, for example. It can be opened and cleaned easily because the individual fibers are strong and there are fewer fibers to break. A 2.0 Micronaire cotton has about three times as many fibers per pound as the 6.0 cotton, and most of them are weak. If the 2.0 cotton is not cleaned slowly and carefully, many neps will be made.

By NORMAN N. NOLEN
Senior Laboratory Technician
Greenville, S. C.

## WATCH FIBER STRENGTH

It's important in nep control to know individual-fiber strength. But do not confuse individual-fiber strength with bundle strength, because a cotton with a high bundle strength may have weak individual fiber strength. To determine individual fiber strength, use this formula:

[Micrograms per inch x 0.464 inches x strength of 1 mg. of cotton from Pressley breaker] ÷ 1,000 = individual fiber strength index.

(The 0.464 inch in this formula

**LINEAR DIFFERENCES IN COTTON FIBER**

| Micrograms per inch of fiber (Micronaire value) | Inches of fiber per pound of stock | Inches of fiber on 100-sq.-in. nep board (50-grain sliver) |
|---|---|---|
| 2.0 | 226,800,000 | 112,500 |
| 3.0 | 151,200,000 | 75,000 |
| 4.0 | 113,400,000 | 56,250 |
| 5.0 | 90,720,000 | 45,000 |
| 6.0 | 75,600,000 | 37,500 |

LENGTH AND STRENGTH differences in cotton fibers have a direct relation to nep production. Lower Micronaire values mean more neps unless there's careful processing.

is the width of the Pressley jaw.)

Here's a comparison of fiber strength in cottons with a bundle strength of 80,000 psi.:

| Micrograms per inch | Individual fiber strength index |
|---|---|
| 2.0 | 0.00687 |
| 3.0 | 0.01030 |
| 4.0 | 0.01373 |
| 5.0 | 0.01718 |
| 6.0 | 0.02060 |

When a cotton has an individual fiber strength index below 0.00800, there will be many neps no matter how the cotton is processed. You should take care in opening and cleaning cotton where the index is below 0.01000. But where the index is over 0.01500, there will be very few neps even if the cotton is overworked.

Linear differences between cottons with different Micronaire values are shown in the table (left).

## MODIFY MICRONAIRE SCALE

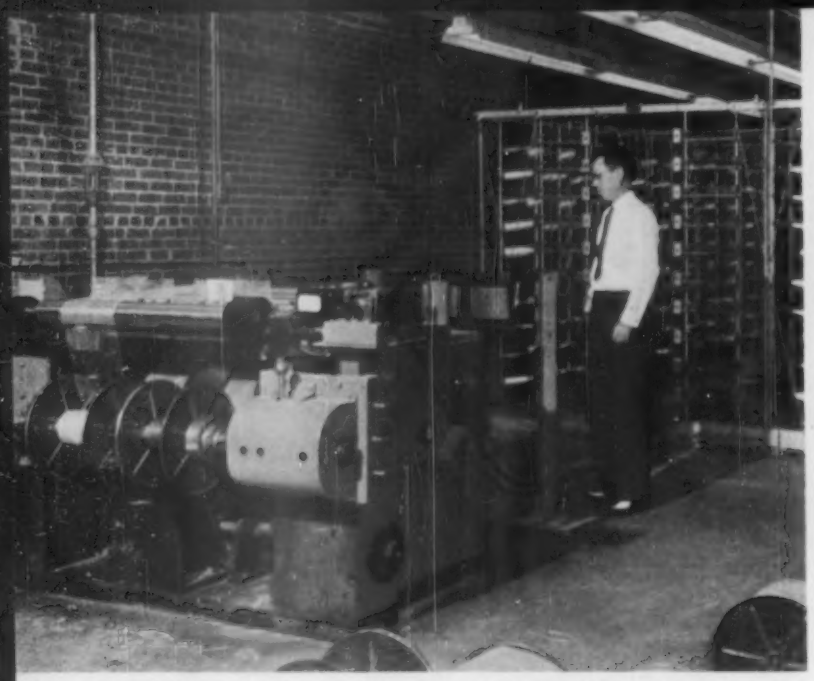
Another way to improve blending is to modify your Micronaire scale by writing in the number of fibers for an average yarn cross section opposite the appropriate Micronaire number.

In the example (10s yarn) shown here, cotton with 188 to 333 fibers in the cross section can be cleaned rapidly and should make few neps. Cotton with 341 to 429 fibers can be cleaned at moderate speeds and with relatively little nep trouble. This cotton should make a wide range of yarn numbers with good breaking strength. In running cotton with 441 fibers or more in the cross section, use caution at opening and cleaning. Neps will appear, but you can make fine yarn with an excellent break factor despite the neps.

FIBERS IN YARN cross section listed with Micronaire scale values can be an aid to good blending. As shown here, there are three general areas of fiber concentration that have to be watched. Cleaning speeds have to be adjusted accordingly.

## HOW MICRONAIRE SCALE DETERMINES SPEED OF CLEANING

| | Micrograms per inch | Fibers in yarn (10s) Cross section |
|---|---|---|
| Fast Cleaning Speeds | 8.0 | 188 |
| | 7.9 | 190 |
| | 7.8 | 192 |
| | 7.7 | 195 |
| | 7.6 | 197 |
| | 7.5 | 200 |
| | 7.4 | 203 |
| | 7.3 | 205 |
| | 7.2 | 208 |
| | 7.1 | 211 |
| | 7.0 | 214 |
| | 6.9 | 217 |
| | 6.8 | 221 |
| | 6.7 | 224 |
| | 6.6 | 227 |
| | 6.5 | 231 |
| | 6.4 | 234 |
| | 6.3 | 238 |
| | 6.2 | 242 |
| | 6.1 | 246 |
| | 6.0 | 250 |
| | 5.9 | 254 |
| | 5.8 | 259 |
| | 5.7 | 263 |
| | 5.6 | 268 |
| | 5.5 | 273 |
| | 5.4 | 278 |
| | 5.3 | 283 |
| | 5.2 | 288 |
| | 5.1 | 294 |
| | 5.0 | 300 |
| | 4.9 | 306 |
| | 4.8 | 313 |
| | 4.7 | 319 |
| | 4.6 | 326 |
| | 4.5 | 333 |
| Moderate Cleaning Speeds | 4.4 | 341 |
| | 4.3 | 349 |
| | 4.2 | 357 |
| | 4.1 | 366 |
| | 4.0 | 375 |
| | 3.9 | 385 |
| | 3.8 | 395 |
| | 3.7 | 405 |
| | 3.6 | 417 |
| | 3.5 | 429 |
| Use Caution In Cleaning | 3.4 | 441 |
| | 3.3 | 455 |
| | 3.2 | 469 |
| | 3.1 | 484 |
| | 3.0 | 500 |
| | 2.9 | 517 |
| | 2.8 | 536 |
| | 2.7 | 556 |
| | 2.6 | 577 |
| | 2.5 | 600 |
| | 2.4 | 625 |
| | 2.3 | 652 |
| | 2.2 | 692 |



WARPER rolls glass fiber on 15-in.-dia. spools of two widths: 7½ and 9¾ inches. President Kuhn checks warping speed to see if machine is running at correct rate. Unit is a Cocker tricot warper.

WINDER with 16 heads is running on glass fibers. Yarn numbers: 150 1/0, 1/2, 2/2, 3/3; 225 1/0, 1/2; 450-1/2.

*Here's a new slant for you. It says that . . .*

# Workers—Not Machines Are the Key to Mill Efficiency

*This man will challenge your orthodox approaches to measuring mill efficiency. What's more, he can prove his approach pays off—at a saving of $500 per week. And that's enough to interest any mill—big or small.*

THERE'S MORE to weaving than checking production at the end of each shift, or day, or week. "The important thing to watch is total output in yards of fabrics at unit cost." That's the management philosophy of Allison A. Kuhn, president of Fiber Mfg. Co., Newton, N. C.

Unorthodox? Yes. It's a different approach to manufacturing management—different and refreshing.

Does it pay off? Yes, again. With this approach to manufacturing management Kuhn (together with his company and his employees) is getting a real payoff from the time and effort spent on cost data and machine analysis at his narrow-fabrics weaving mill. Here are some facts, the result of a recent rearrangement Kuhn devised for weavers' jobs:

- The mill saves $500 every week.
- Weavers get more money for the same amount of work.
- Skilled employees are doing skilled work only. No high-priced skills doing unskilled jobs.
- There are no efficiency reports for management and employees to haggle over. In many a mill these reports, waved in front of employees' faces, are a source of disagreement and wounded pride. But not in Kuhn's mill.

In broad terms, Kuhn's view is this: Machine-efficiency figures are not of the first order of importance. In fact, they can be misleading. What *is* important is getting highest output of product per man-hour from each machine.

## THE MAN AND HIS MILL

The main product of Fiber Mfg. Co. is electrical tape in ⅜- to 1½-in. widths. The company also makes a small quantity of tape for the clothing industry. Average overall output per week is now 15,000 gross (1 gross-144 yards).

This is no fly-by-night outfit. Nor is Kuhn an upstart nonconformist.

LOOM has double-deck straight shuttles. Unit is a 9-ft. Fletcher with automatic electrical signals to help weaver spot trouble quickly at loom stops for bobbin change, ends down in any of four sections, and manual stops. Speed of loom is 200 ppm. President Kuhn laid specifications of this loom against his production needs, found it just right.

Fiber Mfg. Co. has been in business a long time, and thoughtful management has directed its growth and its progress over the years. Kuhn himself has been with the company since 1941, has been its president since 1954, has presided over a significant program of expansion and modernization as general manager, vice president, and president.

When Kuhn came to his father's mill in 1941 (after a few years in research and development with a large textile-mill chain) the mill had only eight looms. In 1946 the company added eight more looms and remodeled the building, which had been erected in 1923. The new looms were Fletchers (19 feet, 4 inches), with single-deck circular battens for light tapes.

## ENTER THE NEW ERA

In 1953 came another eight looms, just like those that were added in 1946. Why the same type? Because Kuhn wanted to standardize on fabric output and loom parts. At the same time yarn-preparation equipment and finishing machines were added. Even so, with its building full of equipment, the company remained small. In fact, it's still small today. As Kuhn puts it: "We're not a large operation here."

Up to 1957 the mill was so small that there was no scope for Kuhn to use his skill at math (math major, Davidson College, 1936). But 1957 was the year of the big change.

That was the year the company had to expand. So it erected a new 7,000-sq.-ft. building and filled it with new equipment. Net result: a rounding out of the company's product line. Up to this time the company had stuck to cotton tape, which is used where abrasion resistance and high absorption are required. But Kuhn now saw a market for tapes with superior strength and high resistance to chemical fumes, heat, and the like. The answer: glass-fiber tape.

Kuhn had made some experiments with glass fibers. They had turned out so well that when time came to equip the new building, he put nothing in it except glass-fiber manufacturing equipment. This doesn't mean he quit making cotton tape. He didn't. He simply kept the two operations separate because they're so different. For example:

• In making cotton tape Fiber Mfg. Co. takes the following sequential

BLOCKER machine and operator are so closely coordinated that there's a lapse of only 7 seconds from beginning to end of 36-yd. roll of electrical tape, including labeling. Second operator (man) singes edges of blocked rolls of tape in last step before the packaging operation.

steps: (1) warping and slashing in a single operation (Cocker cotton slasher), (2) weaving, (3) calendering, and (4) blocking.

• In making glass-fiber tape the company takes these sequential steps: (1) warping, (2) weaving, (3) blocking, and (4) singeing. Yarn isn't slashed, and fabric isn't calendered.

• Cotton-fabric thickness (0.005 to 0.020 inch) is obtained by a combination of yarn numbers, weave, and calendering.

• Glass-fiber thickness (0.003 to 0.030 inch) comes only from the yarn number and the weave.

**Just the right looms**—About this same time (1957) Fletcher Works developed its 9-ft., high-speed, semiautomatic loom for narrow fabrics. Kuhn found the following loom features ideally suited for producing glass-fiber tapes:

*Warp stop motion* (automatic, electrical) with drop wires on each warp end.

*Predetermined pick counter* (automatic, electrical) working with the number of picks on a filling bobbin to stop the loom for bobbin changes.

*Start, stop, and jog pushbutton* within easy reach of the weaver.

*A pushbutton at the rear* of the loom to stop the loom, and a positioning device to stop the batten.

*A signal-light box* on the front arch to show the weaver (1) the section of the loom in which there's a broken warp end, (2) when the loom is stopped to change filling bobbins, and (3) when the loom has been stopped manually.

*Other mechanical features*—antifriction, self-aligning bearings; improved motions; rugged, maintenance-easing design coupled with high speed; electric brakes; V-belt drives; geared shuttle movement.

This was enough for Kuhn. He bought six of these double-deck, straight-shuttle, 9-ft. looms. To round out his glass-fiber tape equipment he brought a Glodde 16-head winder, a Cocker tricot warper with pushbutton controls, and a pneumatic-system blocker.

## PENCIL SHARPENED

Now Kuhn had the building and the machines he wanted, and well-trained, experienced employees. The task ahead: Fit all these pieces together.

Kuhn had figured that a weaver should operate six of the Fletcher semiautomatic looms on glass fiber. It also became clear that if another worker could replace warps, the weaver could handle more than six looms quite comfortably. So Kuhn bought two more of the Fletchers, just like the first six.

Granted, a weaver can't always handle eight looms well, because various types of fibers come and go in the mill from time to time. But Kuhn doesn't worry if one loom is down at times. He says:

"Modern machines are expensive. But they aren't the greatest expense in running a mill. People are. Take a narrow-fabrics loom, for instance. We can buy a 9-ft. loom for around $6,000. Spread that cost over 15 years' amortization, and a few efficiency points each way don't amount to much. We figure it won't ruin us if one loom stops for a few minutes. It's idle employees who hurt us."

Weavers and other employees are on piece rates at Fiber Mfg. Co. They set their own pace, choose their own rest time. Supervisors are few. For the most part they supervise machines, not people. In fact, there are only five supervisors in the entire three-shift operation: a general superintendent, plus a foreman on each of the three shifts (he doubles as a loomfixer), plus a finishing overseer. Weavers have time to do such work as putting new eyes in shuttles and replacing shuttles.

## FIGURES TELL THE STORY

"The important thing is, don't make workers wait for machines. If there's waiting to be done, let the machines do it." That's Kuhn stating his position. He continues:

"Take quillers, for example. We bought semiautomatic machines. An operator can comfortably run a standard machine with 18 heads under average conditions. But we bought machines with 24 heads. Look at it this way: The winding-machine frame averages out about $450. Each head or station costs $135. (Don't hold me to the exact cent because machine prices are always changing.) A little quick figuring shows that a standard machine with 18 heads would cost $450 for the frame and $2,430 for the heads. Total cost, $2,880.

"But for 24 heads we paid only $3,690. That $810 of difference doesn't amount to much spread over a few years, if you compare it to labor lost over the years because the operator could have taken care of more than 18 heads. And when the work is running well, output is high for the operator—at no extra effort on her part.

## GAINS FOR ALL

"We've grown big enough to worry about machine and job layouts," Kuhn says.

"Take cotton-tape weaving, for instance. Our company and our weavers alike are gaining by new arrangements. Formerly we had 36 cotton weavers on three shifts. These weavers wound their own filling and tied their own warps. They were doing a lot of work that a highly skilled weaver oughtn't to do.

"Today we've corrected that situation. Our weavers do nothing but weave. We've made this possible by adding two new Glodde filling winders. Now we lay out the work using only 18 weavers, plus five quiller operators and six warp-tying hands. Where we used to have 36 highly skilled weavers, we now have only 29 total employees in the weaving operation.

"Roughly, that's a saving of $500 a week. Seven people eliminated. With this saving we are able to raise wage rates for the remaining employees and stay competitive at the same time.

"And that's not all. We're still moving. A Barber-Colman portable warp-tying machine recently put into operation will cut our manufacturing costs still further," Kuhn predicts.

Kuhn shows an interesting lack of concern for machine efficiency. Late this summer the new weaver layout had been in operation for two months. But Kuhn, even that long after installation of the layout, had not yet calculated efficiency in percentages. Before the change, machine efficiency for six days a week had averaged 93%, week in and week out. A rough check at summer's end showed machine efficiency had dropped less than 1%. Kuhn was unruffled about that little drop. He kept his eye on people, not machines.

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developed to fulfill individual fiber requirements

| DYE | TYPE | Acetate | Acrilan[1] | Acrilan 16[1] | Arnel[2] | Coval[3] |
|---|---|---|---|---|---|---|
| Acid Alizarine<br>Anthralan®<br>Genalan®<br>Sulphon®<br>Supramine®<br>Supranol® | ACID | | ■ | | | |
| Palatine® | ACID METALIZED | | ■ | | | |
| Naphthol<br>Fast Color Bases | AZOIC | ■ | ■ | | ■ | |
| Genacryl® | CATIONIC (Basic) | | ■ | ■ | | |
| Benzofix®<br>Fastusol® | DIRECT | | | | | |
| Diaminogen®<br>Diazo<br>Oxydiaminogen®<br>Zambesi® | DIRECT, DEVELOPED | | | | | |
| Celliton®<br>Genacron® | DISPERSE | ■ | ■ | ■ | ■ | |
| Cellitazol® | DISPERSE, DEVELOPED | ■ | ■ | | ■ | |
| Anthracene<br>Chrome<br>Chromogene®<br>Chromoxane® | MORDANT ACID<br>(Chrome) | | ■ | | | |
| Supralan® | NEUTRAL METALIZED | | ■ | | | |
| Indo Carbon®<br>Katigen® | SULFUR | | | | | |
| Algol®<br>Indanthrene® | VAT | | | | | |
| Algosol® | VAT ESTER (Soluble) | | ■ | | | |

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# y reference dye application chart

FIBERS[1]

| Arnel[2] | Corval[3] | Creslan[4] | Dacron 54[5] | Dacron 64[5] | Darvan[2] | Dynel[6] | Kodel[7] | Nylon | Orlon[5] | Topel[3] | Verel[7] | Vycron[8] | Zefran[9] |
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u Pont de Nemours & Co.; (6) Union Carbide Chemicals Co., Div.,
l Products, Inc.; (8) Beaunit Mills, Inc.; (9) Dow Chemical Co.

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News of the Month in . . .

# Textile Chemicals

By ROBERT W. PINAULT, Associate Editor, TEXTILE WORLD

## *Soluble Polyesters and Polyamides Improve Abrasion Resistance*

Cellulosic-fiber fabrics acquire much better resistance to abrasion if they're treated according to discoveries made by chemists at Farbenfabriken A.G., Germany.

Soluble or dispersible mixtures of polyesters and polyamides are applied to fabrics in a winch or jig, and the goods are then dried at 120 to 130 C. The heat causes a chemical reaction that fastens the polyester-polyamide mixture on the fiber to produce an abrasion-resistant finish fast to washing and even boiling.

Suitable bases for producing the soluble polyesters are obtained by the condensation of dibasic acids like succinic, adipic, or glutaric acids with a diol such as ethylene glycol.

The polyamides are made from caprolactam, hexamethylene diammonium adipate, etc. The aqueous dispersions are made by dissolving the mixture in methyl alcohol or formic acid. The polyester acts as an emulsifying agent when this solution is added to the water that forms the treating bath.

In a typical application, 3 kilograms of cupra-ammonium rayon fabric is treated in 90 liters of water that contains 1 liter of a 3% methyl alcohol solution of N-methoxymethylaminocaproic acid polyamide and 6% of a polyester made from 1 mole of succinic acid and four moles of ethylene glycol.

The fabric is worked for 1 hour and Glaubers' salt may be added to increase absorption of the polyester-polyamide dispersion. Hand is improved by adding a sulfonated fat to the bath.

Goods treated this way are also less absorbent and dry more readily than untreated material.

## Infrared Heating Gets New Emphasis

Infrared heat as a drying medium for textiles and paper is heading in a new direction, according to recent reports.

Instead of generating infrared by electricity or by gas-fired units, the process (developed by Horace L. Smith, Jr., Inc.) uses a high-boiling-point, nonflammable liquid heat-transfer medium.

An important part of the equipment is a radiating surface that is almost perfectly black—it transmits heat efficiently at all wave lengths. The system operates at atmospheric pressure.

Primary advantages are lower initial investment, rapid installation, and lower operating costs.

## Quaternary Compounds Level Acrylic Dyeings

Level dyeings on acrylic- or polyvinylidene cyanide-fiber fabrics can be obtained with cationic dyes if certain quaternary ammonium compounds are added to the dyebath.

Suitable assistants of this type include dimethyl-cetyl-benzyl-ammonium chloride, and also the compound made by reacting dimethyl palm kernel fatty amine with benzyl chloride. An additional product of the latter can be made by melting 30 parts of it with 55 parts of urea and 15 parts of monoacetyl urea.

The assistants work well at normal temperatures. Farbenfabriken Bayer A.G. developed them.

## Tension—Key Factor In Resin Application

If you apply resin to cotton yarns while they are under tension, you come up with a stronger, tougher fiber than if they were slack. There is reduced elongation at break if you resinate the yarn under tension.

Key to these differences is thought to be the formation of cross-links in fibers when they are in positions unfavorable to their equalization in bearing loads. Premercerization minimizes losses in toughness caused by resin treatments.

High tension applied before drying, followed by low tension during the resin cure, improves toughness over that of slack or high-tension resinating.

All these facts came out as a result of research conducted by James Grant, Head, Fiber Physics Investigations, Southern Regional Research Laboratories. He reported his findings to the Fiber Society. Purpose of the investigation was to find out if losses in tear strength that occur on resin-finished cotton are caused by chemical degradation or increased structural rigidity.

Mr. Grant also found that differences in fiber structure inherent in various types of cotton affect strength factors after resinating.

## Swelling Treatment Boosts Graft Polymerization On Cellulosic Fibers

Much higher add-on of polymerizable substances to cellulosic fibers is possible if the fiber is first swelled before it is exposed to particle or X-ray radiation, according to a recent Du Pont patent.

The greater utility made possible by graft-polymerizing of new mate-

rials on cotton fiber has been limited to some extent by the relatively small amounts that could be fixed on the fiber. Du Pont finds that if the cellulose is swelled with caustic-soda solutions or solutions of salts like zinc or lithium chloride, up to 46% of polymerized vinyl acetate can be left chemically combined with the cellulose after radiation.

The possibilities opened up by this discovery are numerous. Rot resistance, flameproofing, water repellency, abrasion resistance, and weight increases can be built into cotton fibers by treating them with any of several monomers.

Materials that respond to graft polymerization include vinyl phosphorous (flameproofing), vinyl silane (water repellency), and acrylonitrile (rotproofing, heat resistance). Other chemicals that combine with cellulose under radiation are acrylic and methacrylic acids and styrene as well as olefins like ethylene and isobutylene.

## *Way to Kill Moths? Destroy Their Food Right At Its Source*

Two types of antimetabolites that are death on moths are now approaching commercial availability. Man behind the research is Scientist Roy J. Pence (University of California at Los Angeles) whose work was first reported over a year ago (TEXTILE WORLD, Sept. '59, p. 115).

One of the antimetabolites is a pseudo vitamin that is sprayed on woolen goods. Moth larvae that start to nibble on this treated fabric soon starve to death from vitamin deficiency before they have a chance to do any noticeable damage to the cloth.

Another approach is to apply a chemical that cancels out the effect of three of the amino acids in wool that are essential to the moth's diet.

Between the two, moths have a hard time, and either move to greener pastures or starve where they are.

Both compounds are easily applied, nontoxic, and are resistant to drycleaning and laundering.

# Benzyl Alcohol Speeds Wool Dyeing

An exhaustive investigation by British researchers shows that if you add benzyl alcohol to wool dyebaths you get speedier dyeing at lower temperatures and come up with stronger fiber than is normally the case.

The effect of benzyl alcohol, which is only sparingly soluble in water (4% at 17 C.), on the rate of dye pickup in wool dyebaths was noticed at least five years ago. Recently considerable poundage of loose wool, wool top, and yarn have been processed with the aid of benzyl alcohol.

Dyeing times of as little as 30 minutes at 70 to 80 C. gave perfectly satisfactory results with a wide range of milling colors or premetalized dyes.

The addition of benzyl alcohol to melange printing pastes or conventional roller-printing pastes also increases the rate of dye fixation. Steaming time is reduced to as little as 4 minutes at atmospheric pressure.

Fiber strength may be as much as 20% higher for wools dyed or printed with the aid of benzyl alcohol, according to the report.

Just what happens in the dyebath is not entirely clear, but one theory is that the benzyl alcohol is adsorbed at the fiber surface, carrying with it a highly concentrated solution of the dye. This dye-rich layer promotes a higher rate of absorption than a plain water solution.

Other data indicate that wool absorbs benzyl alcohol rapidly even at 25 C. Other discoveries: quaternary alkyl ammonium or pyridinium compounds added to the dyebath reduce the hydrophilic character of polysulfonated dyes and aid in the uptake of these dyes, which otherwise do not respond to the presence of a solvent. The complete report, which covers other details, was written by L. Peters, C. B. Stevens, J. Budding, R. C. Burdett, and J. A. W. Sykes, and appears in the Journal of the Society of Dyers & Colourists, Vol. 76, No. 9.

## Avoid Overscouring Of Man-Made Fibers

You can run up scouring costs and damage the fiber if you overdo the scouring necessary to prepare man-made fibers for dyeing.

That's what Joseph S. Panto, Senior Research Associate, Fabric Research Laboratories, Inc., told listeners at a recent meeting of Niagara Frontier Section, AATCC.

Best way to find out what the fabric contains in the way of foreign material that should be removed is to analyze it by spectrophotometric methods.

Spectrophotometers equipped with a special ultraviolet (UV) attachment can measure the UV reflectance curves set up by oils, sizing materials, and the like.

Once the contaminants are known, scouring procedures can be set up to remove them. Examination of samples via the spectrophotometer during the scouring step will indicate the extent of removal of unwanted additives, and the process can be adjusted to get the best effects without using excess amounts of chemicals or time.

Panto stated that the cost of UV equipment and the time necessary to establish optimum scouring conditions by spectrophotometric methods is small compared to the potential savings.

## Organic Amines Help Wet Crease Resistance

A pretreatment in ethylene diamine or hydroxyethylene diamine will produce good wet crease resistance in cotton or rayon fabrics, according to Courtaulds Ltd. researchers (British Patent 852,962).

Goods are padded in one of these materials and permitted to relax and shrink. Then they are tentered and stretched to 40% above the shrunk dimensions. While still under tension, they are washed with hot water and then dried.

Any usual crease-resistant finish can then be applied to give complete wet or dry crease resistance. The amine treatment won't work if the treated goods are washed and dried in the slack condition.

## Treatment Provides Antistatic Qualities

Polyamide fibers, or any fiber that contains a carbonamide group or groups, can be given increased hydrophilic properties and will absorb dye more readily if they are treated by the following method.

In a typical example, woven polyamide-fiber goods are padded in a a 3% solution of caustic soda in methyl alcohol. Then the fabric is placed in a closed vessel that contains toluene. The temperature is raised to 90 C., and ethylene oxide is introduced and allowed to react for two hours.

The fabric is then washed to remove excess toluene. The electrical resistance is $35 \times 10^9$ ohms at this point compared to $10{,}000 \times 10^9$ ohms for untreated fabric.

The increased conductivity is fast to laundering. After four washes, resistance increases only to $13 \times 10^9$ ohms. Weight, tensile strength, elasticity, and melting point are unaffected by the treatment, which also makes the fiber dye more quickly to deeper shades with disperse dyes.

## Silicone Treatment Increases Wool Strength As Much As 60%

If wool in the form of loose fiber, yarn, or fabric is treated for 15 minutes with a 0.5 to 4.0% solution of silicon tetrachloride in trichlorethylene and dried at 80 to 90 C. for 30 to 40 minutes, strength increases as much as 66%.

The silicone can be padded on goods or yarn, or loose fiber can be saturated with the solution and then hydroextracted.

Low-twist, short-staple yarns seem to benefit most by the process. High-twist, long-staple yarns gain about 25% in strength. The wool should have not more than 8% moisture content at the time of treatment—2 to 3% is preferred.

Just what goes on is not certain except that it has been proved that the increase in strength is not a result of insoluble silica deposited in and on the fibers. The effect is permanent to laundering.

# *Did You Know . . .*

**. . . that chlorite bleach baths can be activated simply and safely with organic ammonium salts? In the case of ammonium acetate or formate, a constant pH of 4.5 to 4.8 develops at the boil. So bleaching conditions are very mild and cause no damage to the fibers.**

**If ammonium chloride or sulfate is used to activate the sodium chlorite, the pH will decrease during the heating period and will drop to 3.4 or lower as boiling continues. Best control of pH with the inorganic salts is achieved by adjusting bath temperature to suit the fiber and other operating conditions.**

■

. . . that neon lights in shop windows affect color, colorfastness, and even fiber strength? Reason—the large amount of light of short wave lengths that is emitted by these units.

■

**. . . that sodium bromite offers possibilities as a desizing agent? Advantages for the product claimed in an article by R. Freytag in Teintex, a French publication, include cold application and no need of intermediate steps before going directly into scouring and bleaching processes. Only 1 gram of active Br is needed per two pounds of fabric to get good starch digestion. The desizing method is now being studied further to adapt it to continuous bleaching methods.**

■

. . . that monochlorourea makes a good desizing agent? Reports from Hungary indicate that excellent starch digestion is possible with this chemical, and the treated goods are absorbent and ready to dye in all but very light shades after normal scouring.

■

**. . . that a presteaming process will aid continuous dyeing of cellulosic or man-made-fiber fabrics? Presteaming increases penetration, opens the fibers, and tends to improve levelness in dyeing.**

■

. . . that you can include Naphthol AS type bases in slasher formulas? A report from Europe says that denims can be handled in this way, which reduces dyeing costs.

## Now—Wash-And-Wear Comes To Spun Rayons

A nonresin process that puts spun rayons in the wash-and-wear category has been announced by Courtaulds (Alabama), Inc.

The finish appears to be equally valuable in providing dimensional stability to spun rayon fabrics. Goods treated with Prestwick, as it is called, can be put through compressive shrinkage systems to come out with 1% or less shrinkage in either warp or filling. The standard Government Cotton Wash-and-Wear test procedure is used to check fabrics finished in this way.

Potential for the finish in cottons, cotton-rayon blends, and blends of cotton with other man-made fibers seems good. The process is to be licensed to finishers. To date the United Merchants & Manufacturers Corp. has finished well over a million yards of spun fabrics by the Courtaulds process.

## Irradiation Boosts Dye Takeup on Acrylic Fiber

Dow Chemical Co. recently patented a graft-polymerization process based on irradiation that greatly increases the variety of dyes applicable to polyacrylonitrile fibers.

The fiber is treated immediately after spinning and before drying with an aqueous solution of N-vinyl pyrrolidone and a small amount of trisodium phosphate, and it is then irradiated at room temperature in a nitrogen atmosphere with high-energy X-rays produced by a Van de Graaff generator.

The fiber is then washed, dried, and heatset at 150 C. for 5 minutes. The fiber is graft polymerized with the N-vinyl pyrrolidone, which makes it very receptive to direct, vat, sulfur, disperse, and premetalized acid dyes. Tensile strength of the fiber is high in both wet and dry states.

# What's New In Dyes and Chemicals

## Softener

**Sonofin 3639A . . .** is a low-cost softener and lubricant recommended for many textile purposes.

Small particle size of the emulsions formed when the product is diluted for use make it applicable to package dyeing. It is also useful in producing a soft hand on knitting yarns and knitted fabrics and as an adjunct to warp-sizing formulas.

The softener can be added directly to resin-finishing baths to impart better hand and increased tear strength to wash-and-wear fabrics. Sonneborn Chemical & Refining Corp. **(Circle D-1 on Reader-Service Card)**

## Soil Retardant

**Juvenon Soil Retardant No. 6 . . .** is particularly effective in reducing the tendency of wool carpets to soil. The product has a built-in antistatic element that accounts for its efficiency. American Cyanamid Co. **(Circle D-2 on Reader-Service Card)**

## Surfactants

**GAFAC . . .** is a generic term that will describe a series of surfactants designed for several textile purposes. They are anionic in type, and include products suited to cotton boil-off, wool scouring, emulsification, and antistatic finishes. Several nontextile uses are included in other formulations.

The surfactants are all stable, easily soluble in water or in aliphatic solvents according to formulation. Antara Chemicals Div., General Aniline & Film Corp. **(Circle D-3 on Reader-Service Card)**

## Synthetic Wax

**Ross Wax 160 . . .** is a brown, medium-hard, high melting point wax that is useful in many industrial applications. Textile uses include water-repellent finishes and fiber lubrication. The wax is compatible with most natural waxes and fats but is insoluble in water. It is soluble in hot naphtha, xylene, isopropanol, trichlorethylene, and Carbitol. Frank B. Ross Co., Inc. **(Circle D-4 on Reader-Service Card)**

## Cationic Softeners

**Uversoft . . .** brands a series of five cationic softeners that are all basically quaternary ammonium salts that contain two long straight chains in the molecule.

The base is hydrogenated tallow, which is modified to produce softeners particularly suited to end use. The line of softeners contains items that are useful as original softeners in finishing plants or home-laundry-type products that improve absorbency and hand of laundered items. Harshaw Chemical Co. **(Circle D-5 on Reader-Service Card)**

## Pigment Binders

**Scherco . . .** brands a pigment binder that requires nothing but thickener and solvent to put it into service for pigment-printing use. Unusual color fastness to laundering and crocking is claimed for the binder, which works well on all natural and man-made fibers. Scher Brothers. **(Circle D-6 on Reader-Service Card)**

## Carriers

**Scherbro . . .** designates a line of six dye carriers that are cold-water dispersible, nontoxic, and cover all aspects of dyeing and printing man-made fibers. The carriers help to cut dyeing time and aid in producing sharp, clean prints. Scher Brothers. **(Circle D-7 on Reader-Service Card)**

## Acid Dye

**National Fast Wool Yellow GL . . .** is an excellent base for bright yellow colors, and is especially recommended for wool, nylon 6, and nylon 6,6.

The dye levels well and has good light and washfastness plus excellent working properties. Recommended applications include suitings, dress goods, carpet yarns, and wool for felt hats. Good results with wool-silk blends and wool-Dacron blends are also possible. Allied Chemical Co. **(Circle D-8 on Reader-Service Card)**

## Reactive Dye

**Procinyl Rubine BS . . .** is primarily intended for application to polyamide fibers but also finds use in polyacrylonitrile-fiber dyeing.

Deep rubine shades are made possible by the new dye. Dyeings have good wetfastness.

Application is by exhaustion in an acid medium, followed by fixation under alkaline conditions.

The dye is not reactive to unmodified polyacrylonitrile fibers, for which the normal methods of applying disperse dyes are used.

Shades build up well with this dye, which has adequate lightfastness for lingerie, hosiery, and dress goods. Resistance to heat-setting and sublimation are good. Arnold, Hoffman & Co., Inc. **(Circle D-9 on Reader-Service Card)**

## Antistatic Compound

**Sonostat 60 . . .** imparts a high degree of static inhibition on wool, man-made-fiber fabrics, and other substrates.

Supplied as a 100% active nonionic liquid, the product is light in color and scours out easily. It does not contain mineral oil and is stable to oxidation, discoloration, or odor formation. It will not corrode equipment.

Application may be in the form of an emulsion or as shipped. Emulsions are readily formed by adding the material to warm water. The emulsions may vary according to need. Concentrations up to 7.5% are practical.

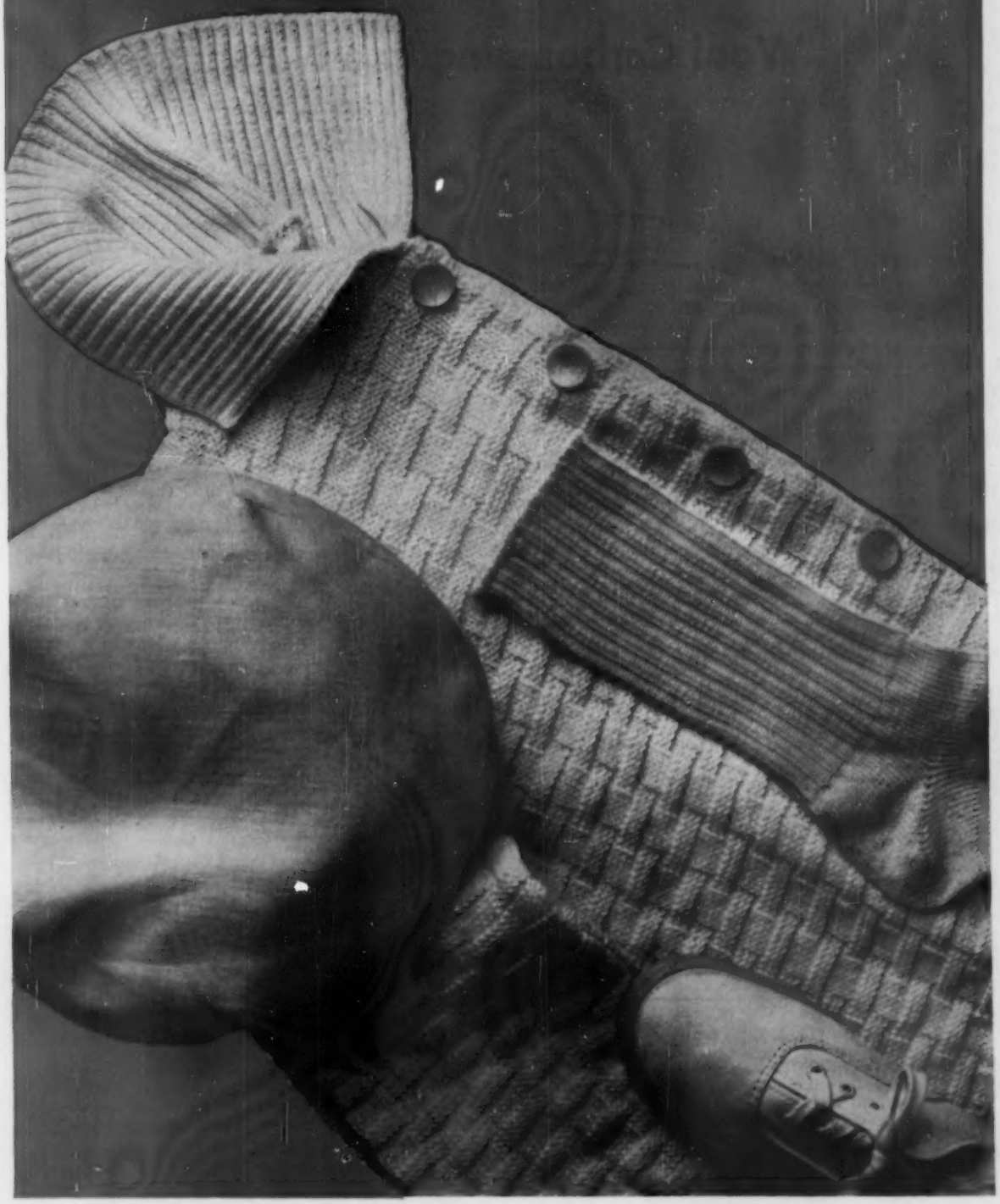
Sonostat 60 in emulsion form is usually sprayed on the fiber to be treated. The 100% product can be added to proprietary lubricating oils to impart an antistatic effect or can be used to provide nondurable antistatic finishes on fabrics. Textile Chemicals Div., Sonneborn Chemical & Refining Corp. **(Circle D-10 on Reader-Service Card)**

a white for every fiber...
a complete range of brighteners
designed for specific fibers.

Tinopal®

Geigy

Geigy Dyestuffs
headquarters for brighteners

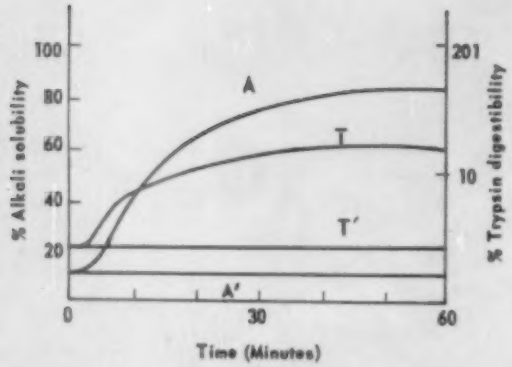


TEXTILE WORLD, DECEMBER, 1960

CIRCLE 75 ON READER SERVICE CARD 75

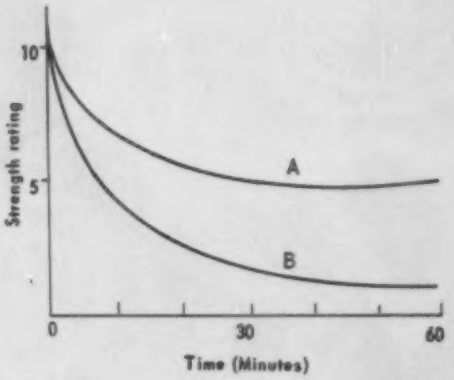
# What You Should Know

## Wool Carbonizing in a Nutshell



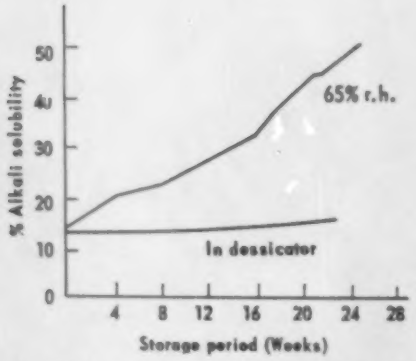

DIGESTIBILITY of wool (in contact with sulfuric acid for 1 hour at 105 C.) and alkali-solubility are affected by heating under wet and anhydrous conditions. In each case, the wool was impregnated with 10% $H_2SO_4$, heated.

Key: A—Alkali-solubility for heating under wet conditions.
A'—Alkali-solubility for heating under anhydrous conditions.
T—Trypsin digestibility for heating under wet conditions.
T'—Trypsin digestibility for heating under anhydrous conditions.

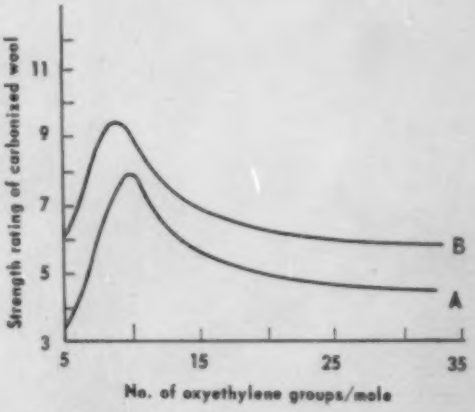



STRENGTH of wool (if it's heated for an hour at 105 C. in contact with sulfuric acid under wet and anhydrous conditions) looks like this. In each case, wool was impregnated with 10% solution of $H_2SO_4$ and then heated.

Key: A—Strength rating (10 denotes highest strength) for heating under wet conditions.
B—Strength rating for heating under anhydrous conditions.




STORAGE EFFECTS are shown in these curves, indicating how the alkali-solubility of carbonized wool (not washed off) is affected by storage under both dry and humid conditions.




SURFACTANT EFFECTS in the carbonizing bath are shown in these curves. Curve A is based on 0.001% of surfactant. Curve B is based on 0.003% of surfactant. Surfactant is a nonionic, nonylphenyl polyoxyethylene.

# About Wool Carbonizing

*Researchers have been busy probing for new information on wool treatment these past years. Now, here's up-to-the minute word (charts, tables, and text) on what chemical changes take place in wool that is carbonized and how you can do the carbonizing job with least damage to the wool itself.*

MOST SATISFACTORY method of removing burrs and other cellulosic trash from wool? It's this: Impregnate the wool with a 5 to 7% solution of sulfuric acid, dry it, and then bake it at 100 C. (or above). This same treatment is also quite effective in removing cellulosic fibers from reworked wool.

After the baking, the stock or fabric goes through crusher rolls that pulverize the carbonized material. Further treatment then removes the residues. This is the basic process —and it's a successful way to remove cellulosic material. The charts and the tables on the facing page and the following pages show in detail what effects (in terms of wool strength and alkali-solubility) this basic method has on the fiber or fabric itself.

During these past few years, research has concentrated on controlling damage to the wool. Of course, there's always damage to some extent. One of the facts about carbonizing is that the acid exerts its major effect on the cellulosic material present. But acid also attacks the wool to some degree, affecting its molecular structure, strength, and dyeing qualities.

In addition, the effect of the acid leaves the wool more vulnerable to attack of alkalis, acids, light, and abrasion. It also tends to yellow the fiber. All of this adds up to reduced wearing qualities of carbonized wool.

By A. J. HALL, B. Sc., F.R.I.C., F.T.I., F.S.D.C., Textile Consultant, Somerset, England

With proper handling, though, wool that has been carbonized shouldn't lose more than 10% in tensile strength, which is regarded as an acceptable figure.

## 3 POINTS OF ATTACK

There are three distinct stages at which wool is susceptible to attack during carbonizing:

1. While the wool is wet with a 5 to 7% solution of sulfuric acid at room temperature.
2. During the drying of the acidified wool, with temperature rising rapidly to 100 C. and acid concentration approaching 100%.
3. During the baking stage when the wool is substantially anhydrous and at a temperature of 100 C. or higher—say 105 C.

The water content of the acidified wool affects the degree and nature of the damage that may occur. Wool may lose tensile strength up to 10 times as fast under the wet conditions of acid impregnation as compared to losses at the anhydrous conditions of the baking stage.

But the opposite is true regarding the alkali-solubility of carbonized wool, and this property is widely recognized as a measure of the damage possible in carbonizing. Trypsin digestibility and strength curves (see facing page) show these effects.

Experience has taught that if you find high alkali solubility in comparison to strength loss, you can look for the trouble in the early wet stages of carbonizing. But if the strength loss is high, it most probably occurred during the baking stage.

## MEASURING CHANGES

Alkali solubility is generally checked by the method of Harris & Smith (Journal of Research, National Bureau of Standards, 1936, 17, 577) and consists of measuring the loss of weight of a wool sample that has been steeped for 1 hour in a 0.1 N NaOH solution.

Another way to measure wool damage is by the trypsin-digestibility test. The wool is steeped in a 5% buffered solution of trypsin at pH 8 for four hours, then dried and weighed for comparison against its original weight. A 0.2 gram sample is used, with 5 cc of the trypsin solution. In the digestibility curve, the trypsin-digestibility and alkali-solubility curves run parallel.

The results of these tests correlate well with performance of woolen fabrics. Where alkali solubility is high, abrasion resistance is low (see table, p. 79).

But alkali-solubility isn't the whole story in determining what causes poor wearability in wool.

Damage to tensile strength, as well as fiber embrittlement, can be caused during the baking process. Therefore wool with an alkali solubility factor that is altogether satisfactory may still be unsatisfactory to the consumer.

## WATCHING CONDITIONS

Wool may be carbonized and set aside for some time before it is neutralized. If it is stored in a dry atmosphere, little or no damage will occur. But if the wool is stored for long periods in a humid atmosphere,

it will suffer considerable damage. Uneven dyeing and lowered durability are probable results of storing carbonized wool in a damp atmosphere. Even under fairly normal conditions of 65% relative humidity, the fiber changes considerably in a few weeks (curve, p. 76).

## SHOWING STORAGE EFFECTS.

Up to this point we've considered the physical changes brought about in wool by the carbonizing process and subsequent storage. Let's see what happens chemically.

Recently, chemists have found that when wool combines with sulfuric acid, a complex reaction occurs between the acid and the serine and threonine residues of the wool molecule.

The theory that the free $NH_2$ groups on the wool molecule were the primary elements in the wool-sulfuric acid reaction has been pretty well upset by later research. If the $NH_2$ groups are made inaccessible by treating the wool with 1-fluoro-2:4-dinitrobenzene, or if the $NH_2$ groups are converted to hydroxyl groups, the wool-acid ratio, instead of being reduced, is at least equal to or greater than that for untreated wool.

These and other experiments warrant the conclusion that the reaction of wool with sulfuric acid produces the O-sulfate ester compound illustrated below.

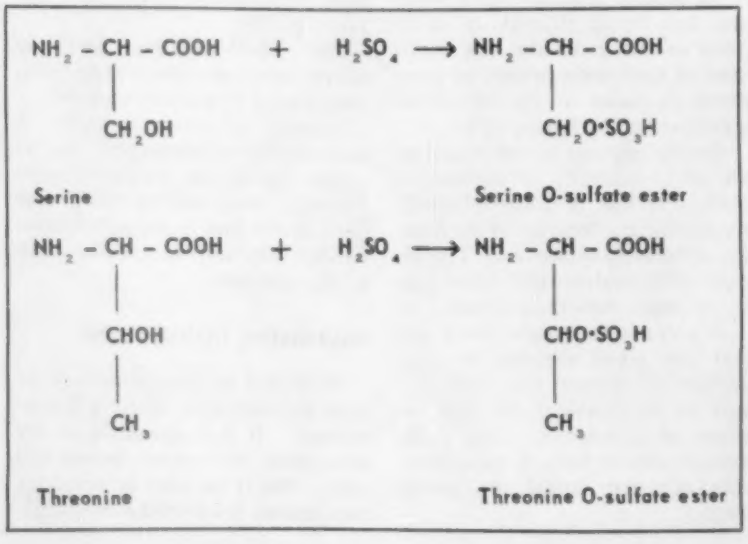
These O-sulfate esters are fairly stable, and simple rinsing of carbonized wool is not enough to remove all the acidity, even when a mild neutralizing substance like sodium acetate is present.

It takes an alkaline hydrolyzing treatment to eliminate all traces of free acid. And the effect of residual acid on dye absorption is such that complete neutralization should be carried out. Otherwise as much as 1% of the acid may remain and thus affect the wool during subsequent storage.

The basic chemical changes in wool caused by carbonizing involve breakdown of the wool molecule by transverse fission or breaking of cross bonds. In any case, free amino groups form. For example, untreated wool may have 10 micromolecules of N-terminal amino groups per gram, but in one test, the same wool carbonized, stored dry for seven weeks, and then neutralized, had 16, 19, and 15 micromolecules respectively at the three stages of treatment. The final neutralization always reduces the number of free amino groups.

## REDUCING DAMAGE

If nonionic surfactants are added to the acid bath, a very definite protective effect is noticed. Comparative results with and without a surfactant are shown in the table on p. 79.




Anionic or cationic surfactants have been found to have protective qualities also, but the anionic types tend to be absorbed preferentially by the wool, and the cationic types are more expensive.

Another interesting fact concerning the use of surfactants in carbonizing liquors is that when they are present, the wool tends to pick up more acid and less water. This effect is probably caused by the fact that the surfactant speeds up the initial transfer of the water content of the wool to the acid bath, which occurs when wool is first impregnated with the carbonizing liquor.

The protective effect of nonionic surfactants is associated with the fact that wool carbonized with them has a lower alkali solubility. But the differences in wool treated with and without a surfactant are relatively small. The improvement in yarn strength is much greater than you would normally expect from a comparison of the alkali solubilities of wool carbonized with surfactants and without them.

Wool is also protected from acid damage in carbonizing if sodium sulfate is added to the bath as shown on p. 79.

## PICKING A SURFACTANT

Experiments with nearly ninety different surfactants led to the choice of Lissapol NX. Most of the surfactants were nonionic and contained polyoxyethylene as the hydrophilic group. (See p. 79 for comparisons.)

Tests run with these products at optimum concentration in relation to preservation of the tensile strength of the wool show that the surfactants based on a polyoxyethylene group attached to alkyl or aryl groups are most effective, while polyoxypropylene groups give little protection. Anionic products are only moderately effective, while cationic surfactants are about as good as nonionic materials.

It is suspected that the anionic products tend to adsorb on the ionized side chains of the fiber, and thus leave more sensitive areas unprotected. Selective adsorption of the anionic surfactant by the wool is known to take place, which depletes the bath on long runs.

# Four Keys to Wool Carbonizing

## 1. How Alkali Solubility Affects Abrasion Resistance

| Fabric | Alkali solubility | Abrasion resistance (number of rubs to produce a hole) |
|---|---|---|
| Dyed, poor wearing qualities | 28% | 2,440 |
| Dyed, satisfactory wearing qualities | 16% | 8,705 |

## 2. How Surfactants Protects Yarn Strength

| | Mill A | | Mill B | | Mill C | |
|---|---|---|---|---|---|---|
| | No S | With S | No S | With S | No S | With S |
| Wool yield | 57.10 | 58.9 | 55.5 | 58.9 | 66.4 | 79.3 |
| Yarn strength | 547 | 602 | 689 | 841 | 778 | 989 |

[S=Lissapol NX (I.C.I.)]

## 3. How Sodium Sulfate Lowers Acid Damage

| Sodium sulfate in acid carbonizing liquor | Sulfuric acid in impregnated wool | Strength rating of carbonized wool |
|---|---|---|
| 0.0% | 10.5% | 1 (low) |
| 0.5 | 10.4 | 1 |
| 1.0 | 10.5 | 1 |
| 2.0 | 10.4 | 2 |
| 5.0 | 10.2 | 2 |
| 10.0 | 10.0 | 4 (high) |

## 4. How Various Surfactants Compare

| Type of surfactant | Tensile strength of wool |
|---|---|
| Polyoxyethylene esters of oleic, lauric, and stearic acids | 8.6 (high) |
| Polyoxyethylene ethers of alkylaryl hydrocarbons | 8.6 |
| Polyoxyethylene ethers of alkyl hydrocarbons | 8.6 |
| Condensates of polyoxyethylene and polyoxypropylene | 3.7 |
| Condensates of polyoxyethylene and polyoxypropylene with ethylene diamine | 2.8 |
| Anionic versions of the condensates | 4.4 |
| Cationic versions of the condensates | 8.2 |

The effectiveness of a surfactant depends considerably on the balance between the lipophilic portion and the oxyethylene groups in the compound. There is an optimum ratio in each series of surfactants when the lipophilic portion is the same and the oxyethylene groups are varied. Surfactant curve (p. 76) points up this fact clearly.

What actually happens to cause the protective effect when surfactants are added to the carbonizing liquor is not known. There is no apparent link with wetting out power and better distribution of acid through the wool fiber because the polyoxythylene - polyoxypropylene surfactants lower the surface tension just as much as others tested, but they are much less effective.

Grease and other impurities in the wool will lower the effectiveness of any surfactant.

Summing up, you can carbonize wool with the least over-all damage to the fiber if . . .

1. You include a nonionic surfactant based on polyoxyethylene in the carbonizing liquor.

2. You neutralize the wool completely with an alkaline wash if it is to be stored for any length of time.

3. You keep storage conditions for carbonized, unneutralized wool dry and the humidity low.

# Now—Printing Dacron Top

*That's how this plant gets first-rate color effects.*
*The system puts an old process to work in a new way.*

PRINTING INSTEAD of dyeing is one way to avoid the costly troubles often associated with dyeing. That's why, when Woonsocket Dyeing Co. decided to go into the production of Dacron-wool blended yarns, it also figured that the best way to color the Dacron component was by the Vigoureux printing process (see photos on the opposite page).

Woonsocket is primarily a wool-top dyeing operation. It produces about 80,000 pounds of dyed wool top per week. When it became apparent that Dacron-wool blends were here to stay and bound to increase in volume, the plant went all the way and put in a complete tow-to-top department to prepare the Dacron for dyeing or printing (and subsequent blending and spinning).

Room for the 6,000-sq.-ft. department was made available when an assortment of old-model gill boxes were moved out. New Warner & Swasey Pin Drafters installed in an adjacent room produce more top in a quarter of the space needed by the old equipment.

A Warner & Swasey Pacific converter breaks the tow, which is then fed to a primary gill and then through two Pin Drafters for final blending and finishing. Top at this point is ready to ship as is. Or it may be dyed to buyer's request.

Top that is to be Vigoureux-printed is taken out after the first Pin-Drafting step.

## CARRIERS—NOT NEEDED

Dacron top that is colored by Vigoureux printing does not need carriers to develop the full shades.

Woonsocket selects Latyl colors or other disperse dyes to print Dacron. The Vigoureux printing rollers are made to print 25%, 50%, or in some cases 100% colored areas on the top as it passes through.

The final shade of the Dacron-wool blend determines the color that will be printed, and to what extent it is applied.

## PRINTING—FAST, CHEAP

Vigoureux printing is an old story with wool-top dyers, and the process is easily adapted to coloring the polyester fibers.

Color is applied to a smooth sheet of top that is fed over a roll supplied with the color dispersed in a gum solution. A roll that has spirally-placed grooves puts pressure on the top of the sheet of tow. The amount of tow that is colored is governed by the percentage of raised area on the grooved roll compared to the depressed areas. Usually the grooved rollers are designed to color 25 or 50% of the top passing through. But for a solid color, a plain roller replaces the grooved roller. The machine then acts more like a pad than a printing machine. Production is 100 to 125 pounds per hour.

For the increasingly popular Dacron-wool blend yarns, Vigoureux printing is ideal. Most of the color effects that are used in men's and women's wear are the heathers, oxfords, or tertiary blends in other ranges that depend for their final effect on the total reflectance of a number of various straight colors very intimately blended in gilling and spinning.

Vigoureux printing is thus a natural for these shades. And Vigoureux printing on Dacron eliminates the long and costly dyeing process that requires carriers or expensive high-pressure dyeing vessels. Add to this a productive capacity of 100 to 125 pounds per hour and it is easy to see why the Vigoureux process is favored for the coloring of Dacron-wool blend yarns.

Vigoureux print pastes are made up with converted starch. Often they are of the regular British gum type. The color is well dispersed in the starch to avoid any tendency to produce specks.

Woonsocket's printing machines are old models, but they have been modified by increasing roll pressure to get better penetration of color. The printed top is swung off onto a truck and wrapped loosely to keep it from tangling during handling.

The bundled top is placed in a high-pressure steamer, where the color is developed at 12 to 15 psi. for one hour. With this amount of pressure, Woonsocket gets excellent color value without the need of carriers. Up to this point any color except black can be produced.

## BLENDING STEP BY STEP

The printed and steamed Dacron top then goes through a conventional Sargeant three-bowl backwasher that removes any unfixed color. Then it goes into a three-pass hot-air dryer.

As the top leaves the dryer, it moves through a four-head gill box and winds into balls. This initial blending is followed by a Pin-Drafting operation. Top that will be blended with wool is put through Woonsocket's new blender-finisher units in the proper proportions to satisfy the fiber-content requirement as well as shade matching.

The blenders are Warner & Swasey M-3700 Pin Drafters with 20 x 42-in. can delivery. The finishers are M-3680 models.

## CONTROLLING QUALITY

Woonsocket's laboratory plays an important part in the development of the shades that are dyed or printed on wool and man-made fi-

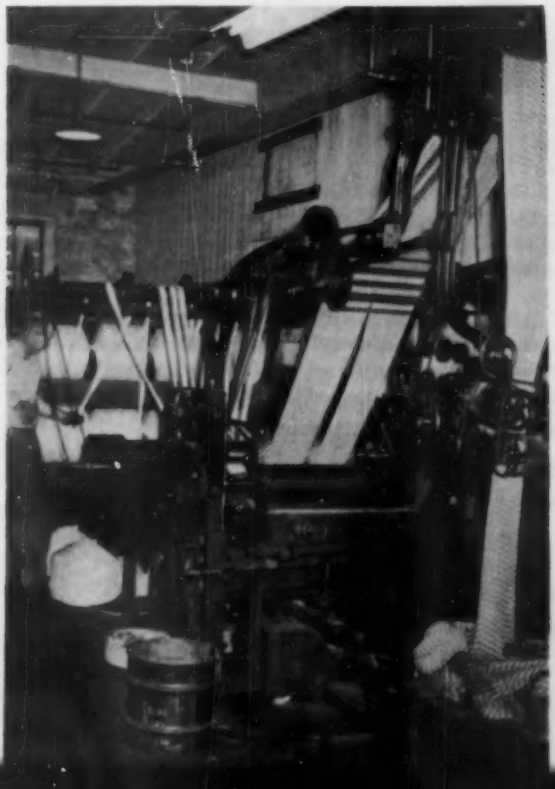
TOW-TO-TOP department takes just one man. Converter (left) produces cut tow. Tow goes through rough gill and then through two Pin Drafters for final blending. After this operation it is ready for printing.

bers. Test lots dyed in the laboratory set up standards for plant-scale operations, and every lot is rechecked for dyeing quality before it leaves the plant.

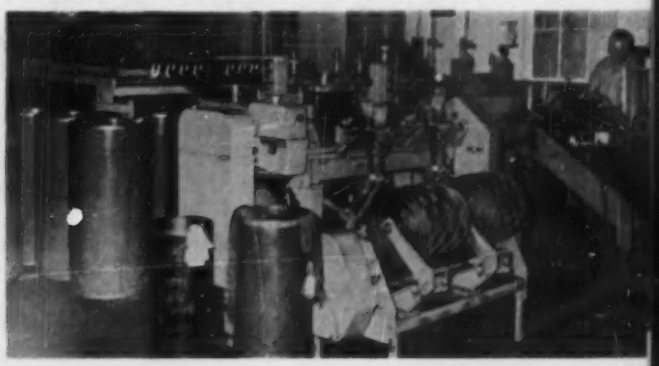
The hundreds of blends of various colors that go to make up the muted grays, browns, and blues that are used in men's and women's wear are made by hand carding samples of the necessary straight-color dyeings. Laboratory findings as to the right proportions necessary to make a heather shade from red, blue, and yellow top, for example, then serve to guide blenders and finishers.

While the bulk of Woonsocket's work is the dyeing of all-wool top —about 80,000 pounds per week is handled this way—the Vigoureux-printing operation is an important adjunct that fills a need in this day of blends of man-made and natural fibers.

USUAL SET-UP of a Vigoureux printer works like this. Twelve to 16 balled tops feed into it at a time.



NEW BLENDING and finishing equipment is used alike for dyed or printed top to produce the final color blends.



HEART of Vigoureux machine is feeding and smoothing mechanism. Flattened tow means uniform color-penetration.

# are POWER-MATCHED

## To Provide Predictable Cost Control

**MINOTINT** — Highest power-matched tinctorial strength available.

**SOLUTINT** — Widest selection of POWER-MATCHED colors.

**PETROTINT**—A new line of oil-soluble fugitive tints.

**TINTINOL** — The first prepared solution tints, originated by Borne.

**SYNTINT** — Pigment dispersions for heat-conditioned nylon and wool.

**POWER-MATCHED TINCTORIAL STRENGTH** is the outstanding property of Borne's **MINOTINT, SOLUTINT** and **PETROTINT** series. One ounce of any selected color will produce the same relative sighting intensity as one ounce of any other color in the same series. Hence the term **"POWER-MATCHED."**

**DESIGNED FOR MAXIMUM FUGITIVITY** on all fibers with normal scouring, **BORNE** Fugitive Tints are color concentrates compounded in a fiber-conditioning formula that combines lubricant, surfactant, humectant, and antistatic components.

**DRAMATIC COST SAVINGS** based on mill cost per pound of fiber tinted—not on cost per pound of tint—are possible through selective application of Borne colors. The Borne Tint Test Method will prove this for you. It is a simple, direct method for comparing tint strengths and calculating mill costs.

**WRITE TODAY** for our unique **TEST KIT** and more information —complete in the Borne Fugitive Tint Brochure.

**BORNE CHEMICAL COMPANY, INC.**

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# Cut dyehouse reruns and seconds up to 25% by using Morton Chemical Grade '999' Salt!

Records show when dyers switch from average purity salt to high purity Morton Chemical Grade '999', reruns and seconds drop from an average of 8.7% to an average of 5.5%. Colors are truer, reruns are fewer with Chemical Grade '999'. In fact, many dye manufacturers use Morton Chemical Grade '999' Salt in standardizing their dyes before they are sent to you!

With salt of average purity, calcium and magnesium compounds complex dyes and reduce their effectiveness. But with high purity Chemical Grade '999' Salt, you get the all sodium salt—99.95% pure sodium chloride with a trace of sodium sulphate—that is recommended whenever commercial calcium free salt is required.

Available in 100-lb. bags or bulk, Chemical Grade '999' is ideal for direct salting and brine. It leaves no accumulation of insolubles that necessitates costly brine system cleanouts.

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## At AATCC's 39th Convention

# Chemists Focus on Dyeing,

*Here's a run-down on the recent Philadelphia convention, where nearly 1,700 members and guests heard about new developments: scientific color picking, low-temperature dyeing, odor control, new resin combinations, and many other things.*

NEW DEVELOPMENTS in dyeing and finishing man-made fibers. Blending man-mades with natural fibers. Those were the two top subjects of discussion at the recent 39th Annual National Convention of the American Association of Textile Chemists and Colorists at Philadelphia, held in October.

Nearly 1,700 members and guests heard a total of 22 papers that ranged over a wide variety of subjects. Samples: union dyeing problems, fluorocarbon finishes, chlorine-retention, odor control, continuous dyeing, resin combinations, and low-temperature dyeing. (You'll find summaries of some of the stand-out papers below.)

One of the major exhibit focal points was the scientific determination of color in textiles. Two instruments developed by the Army Quartermaster Research & Engineering Command were on display. F. J. Rizzo, of the Quartermaster Corp, followed up with a paper telling about them. These instruments make it easier to gage color accurately and objectively, offer the opportunity to reduce costs, and should help solve consumer complaints about color.

A Davidson & Hemmendinger machine (the Colorant-Mixture Computer) on display picks electronically the dyes (and their correct proportions) to match shades without metameric faults. In sum, guesswork and subjective color evaluation are on the way out. Objectivity is on the way in.

### Mood: Optimistic

The pessimistic attitude that has begun to mark many parts of the textile industry these days wasn't in evidence at this convention. The research work behind these papers indicates a high level of confidence in the future of the industry.

You'll get a good idea of the scope and high quality of the material presented at the meeting by scanning the following condensations of some of the more important papers that were read.

### Chlorine Causes Competing Reactions

**The chemical reactions that are involved when crosslinking resins are subjected to chlorine include both chloramide formation and a competing reaction in which active chlorine destroys the resin nucleus.**

Resins were tested both on fabric and by test-tube methods to come up with well-established mechanisms that show how chloramides decompose to form hydrochloric acid and how to inhibit their effect on fabrics.

Degradation of cellulose fabrics from resin chloramides is caused primarily by hydrogen chloride rather than by oxidative attack of active chlorine on the chloramide.

Chloramide formation probably follows simple laws of equilibrium according to the number of NH groups in the resin and the equilibrium constant for the chloramide-formation reaction for the resin.

This study indicates that resins should be more resistant to the oxidative attack of chlorine.

Methods of inhibiting chlorine degradation (some of which are being used today on an empirical basis) include the production of resins that will not form large amounts of chloramides and the production of resins that, when cured, have almost total substitution of nitrogen atoms.

There is also a need for resins that form very stable chloramides that will not break down under normal ironing conditions.—*R. Lee Wayland, Chairman and Speaker, Piedmont Section*

### Dyeing and Resin-Finishing In One Step

**Reactive dyes of the vinyl sulfone, trichloro-pyrimidine, monochlorotriazine, and dichlorotriazine types can be applied with thermosetting resins in a one-run process that has several advantages.**

The elimination of a separate finishing process as such cuts labor costs. By using alkaline catalysts for the resins, the color yield of the reactive dyes is increased by 20 to 50%.

Resin fixation is adequate to produce crease recovery angles in the range of 260 to 270 Monsanto and is durable to multiple home launderings at 140 F.

The process has been developed to the commercial stage. Thorough investigation shows that the dye-

# Blending Man-Made Fibers

stuff is primarily attached to the cellulose. In early work with acid-catalyzed systems, it was demonstrated that the dye was largely fixed on the resins, so this method was abandoned.

The resin used in the process is of the monomeric urea-formaldehyde type, which can be catalyzed by the sodium carbonate that activates the reactive dye and is present in the dye-resin bath.

The process has been successful on both cotton and rayon.—*George C. Kantner, Speaker, Delaware Valley Section*

## How Fluorocarbon Finishes Affect Dyestuffs

**The development of several fluorocarbon compounds that are capable of resisting oil-borne stains when applied to fabric prompted this investigation into their compatibility with finishing agents and dyes.** The effect on physical properties of the treated fabrics and the dyes were noted and, as a corollary, the effect of the dyes on the fluorocarbon finishes.

Results of the work show that fluorocarbons vary widely in their compatibility with finishing agents. As a class, thermosetting resins show separation in the finishing bath, but can be made compatible with fluorocarbons if a surface-active agent is added.

Water repellents generally are compatible. Thermoplastic resins and softeners vary in compatibility even among similar chemical types.

Oil and water repellency were affected in varying degrees by the addition of different finishing compounds with the fluorocarbons. Some types of water repellents were found to have a synergistic effect in combination with fluorocarbons.

Generally, fluorocarbons were found to have no significant effect on dyestuff properties, and vice versa.—*Edward R. Alexander, Chairman and Speaker, Rhode Island Section*

## Engineering Study Aids Fabric Design

**The problems that face the fabric designer today have been multiplied by the two-score or more new fibers now on the market.**

We have compiled a set of engineering charts that can aid the designer in calculating the limits for fabric construction.

Based on fabrics that contain Creslan acrylic fiber, the tables can be adapted to use with other fibers if corrections are made for the various specific gravities. The huge mass of data was calculated with electronic computers and takes into account such factors as yarn count, ends and picks, covering power, and maximum fabric constructions for several basic weaves.—*H. C. Haller, American Cyanamid Co.*

## Union-Dyeing Problems—No Answer Yet

**The continuing increase in man-made-fiber blends presents a need for improvements in union-dyeing techniques.**

Neutral-dyeing 2:1 premetalized dyes offer simplicity of application and fastness for wool, nylon, and acrylics. But shade matching is hazardous and critical because this class of dyes is nonleveling and difficult to apply.

Partition of dye for two different fibers is rarely equal. This presents difficult problems of controlling dye uptake. In some instances, satisfactory results are obtained by using dyebath auxiliaries. However, present known products do not offer complete versatility.

For success with present-day techniques, it is necessary for the colorist to exercise control to closer limits. The future solution lies in the development of new dyeing auxiliaries and more exact knowledge of the behavior of today's auxiliaries.—*Bennett S. Gesmer, Chairman and Speaker, Northern New England Section*

## Chemical Changes Improve Fibers

**The usefulness of textile fibers depends on both their physical and chemical properties,** and these properties in turn go back to the structure of the fiber molecule and its chemical composition.

Fiber producers have provided the industry with many new fibers with new chemical structure and improved physical properties.

Finishing operations also change fiber properties in both directions. The current wash-and-wear finishes are considered to rely for their crease resistance on crosslinking mechanism.

Greater knowledge of what goes on in the fiber molecule as a result of chemical treatment will lead to better and more economical processing because at this time much remains to be known in spite of 30 years' study of the subject, particularly in the wash-and-wear field.

Newer techniques involving application of resins or reactants under tension promise increased tensile strength.

Changes in crystalinity of fibers produced by heat or chemical modification are effective on both natural and man-made fibers in improving crease resistance.

The existence of only a few true

crosslinks seems to provide good wash-and-wear effects even after a polymer-forming resin has been removed from the fabric by solvents. The implication is that more economical finishes of this type are possible if the right material and application method can be found.

Tests made with vinyl cyclohexane dioxide and bis-(2, 3-epoxycyclopentyl) ether showed that these substances impart durable wash-and-wear effects even after added solids have been almost entirely extracted from the fabric.

Other fields of interest to the textile chemist are the modification of man-made fibers to improve their textile properties.—*Arnold M. Sookne, Harris Research Labs*

## New Odor-Control Products Can Aid Textile Finishers

**Problems in odor control, originating from such diverse sources as processing wastes on through to finished fabric, can be solved by odor-control chemicals that are available today.**

The mechanism of odor control is complex and may be based on substitution of a pleasant odor for a foul one, or by absorption of a foul odor to a point where no odor is detectable. It is possible to combine a foul odor with certain chemicals or mixtures of them to produce a neutralizing effect approaching complete lack of odor or a resulting odor that is not unpleasant at least.

Control of odor of textile-mill effluents is not uncommon in European areas of dense population and concentrated industry. Odor-control products are added to sulfurous wastes and scouring liquors. Mixed wastes going to settling lagoons in the U. S. are being treated in the same manner to overcome odors arising from decomposition of amines, proteins, phenolics, and a host of assorted chemicals that are used in normal processing.

Many odorous chemicals can be used to combat the odors rising from decomposition of chemicals used in normal processing. The combination is not unpleasant.

Wash-and-wear finishes are often productive of odor from free formaldehyde and amine compounds. Processing and storage areas in mills can become unpleasant places in which to work. And at the merchandising level, department stores have had an odor problem from resin-finished goods.

Odor-control products added directly to the resins are now in use in about 15 American mills. The end result of such products is to neutralize odors arising from the resins rather than to superimpose a floral or perfume-type odor.

These products survive curing, and are being used as a substitute for afterwashing at a cost of 0.01 to 0.05 cents per yard. If goods are afterwashed, the deodorant is placed in the final rinse box at a rate of 1 to 4 ounces per 100 gallons. If aftertreatments follow, the same amount can be used in the finishing pad box. Odorous goods can be refinished with a solution of 0.25% of a deodorant plus 0.1% soda ash.

Surveys indicate that public preference is for a clean, fresh odor in textile materials rather than the perfume-type odors that have been tried with more or less success.—*Breckinridge K. Tremaine, Rhodia, Inc.*

## Resin Combinations Reduce Felting Shrinkage

**A finish for wool based on a combination of an acrylic polymer with a thermosetting resin makes wool less likely to shrink.**

The best range of acrylic to thermosetting resin is about 5 to 10 parts of acrylic to 1 part of thermosetting resin. The acrylic resin is a Rohm & Haas product, RHoplex HA-1. Other polymers that could be thermoset were also used in trials. Without the nitrogen-bearing resins, the hand of the goods was noticeably softer.

Comparing the chemical treatments, which have a degrading effect, with the acrylic polymer treatments of an additive nature, the hand of fabrics is generally firmer when resins are applied and softer when chlorination is the means used to reduce felting and shrinking. The resins improve abrasion resistance, while chlorination reduces this factor. Dyeings are not affected to any great extent by resin treatments, which is not true of chlorination.

Acrylic polymers tend to reduce fuzziness and pilling due to laundering to a greater extent than chlorination, but tensile strength is reduced slightly more by resins than by chlorination.

Shrinkage values of acrylic-treated woolens are at least the equal of results produced by degradative treatments, and there are fewer unwanted secondary effects.—*Fred H. Steiger, Rohm & Haas Co.*

## Montforts Reactor Shows Good Potential

**The Montforts Reactor provides a high concentration of energy in chemical treatments of several types under easily controllable conditions of time, temperature, and tension.**

The machine is well suited to the production of medium-sized runs. Goods are first saturated with the chemical suited to the process at hand and then pass between an endless blanket and a heated drum. Exposure time can be varied to meet conditions and is usually from 6 to 15 seconds. Vaporization of the water in the goods creates a small positive pressure and gives a higher reaction temperature than is normally possible in dyeing machines of the open type.

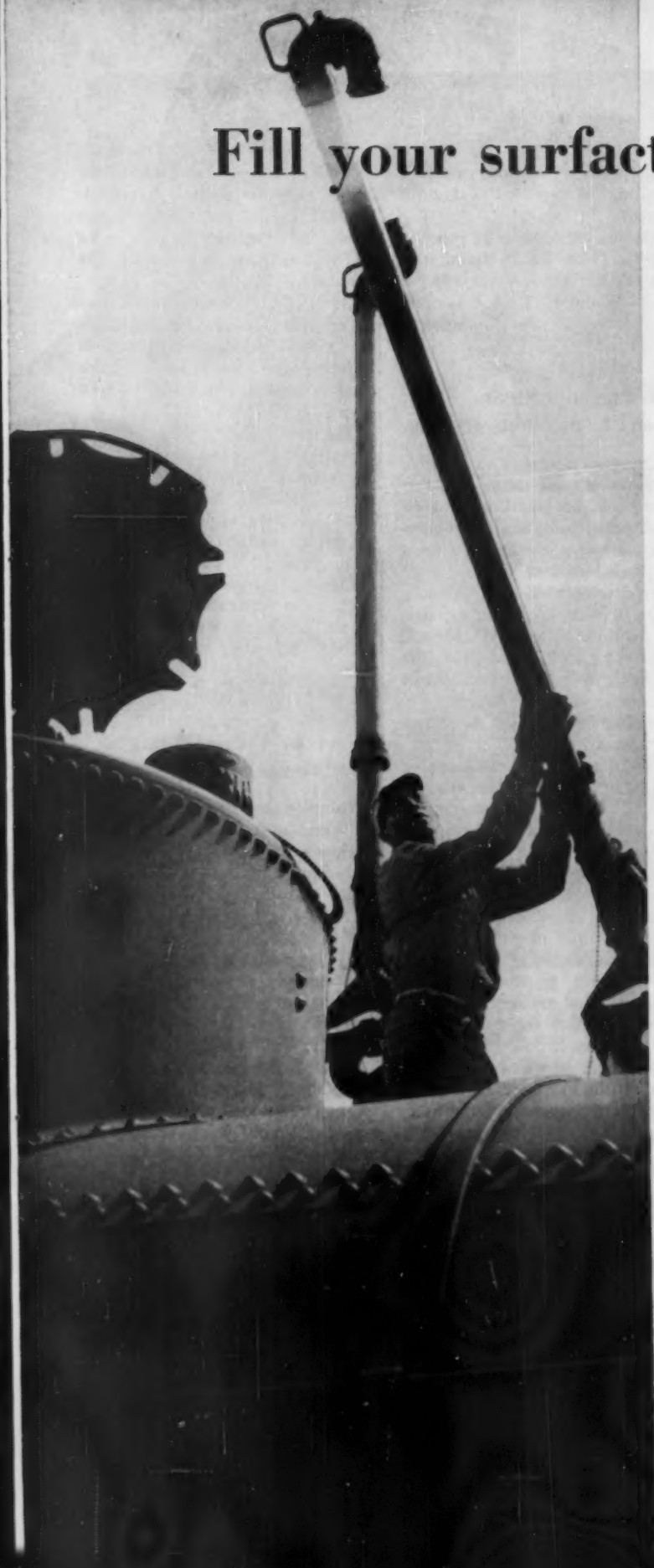
Application of disperse dyes to hydrophobic fibers such as Arnel, Dacron, Fortrel, Darvan, etc., require the addition of solvents to the dyebath to speed reaction.

By selecting the proper dyes, blends of hydrophobic fibers with cotton or rayon can be crossdyed, one fiber reserved, or both dyed to produce solid shades.

Vat and sulfur dyes are applicable in the reactor. With the exception of polyester fibers, the system will produce deep shades with disperse dyes on acetate, nylon, and Arnel, and light to medium shades on polyester.

Facing is minimized by heating

. . . *Turn to page* 88



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| NP-27 | 20 |
| TP-9 | 51-56 |
| NPX | 60-65 |
| NP-35 | 90-95 |
| NP-40 | 100 |
| TMN | 35-37 |
| XD | 60-65 |
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the blanket 25 to 35 C. above cylinder temperature, but the problem is not solved 100%.

Taper.ng off in shade is no problem if a small pad trough is used and dye solutions are padded on at low temperatures which, however, must be consistent with solubility.

Fiber-reactive dyes can be applied successfully to cotton or rayon on the reactor. Pretreatment of Arnel with diacetone alcohol in the reactor improves its dyeability in subsequent winch-dyeing procedures.

Results of the extensive experimental work bear out European experience.—*Fred Fortess, Celanese Fibers Co.*

## Dyes, Sulfa Content—Crucial in Rayon Dyeing

**Sixty-nine fast-to-light direct dyestuffs were tested in this study to see how they behaved in dyeing desulfured or undesulfured rayon.**

The sample dyeings were evaluated for shade differences, lightfastness, and washfastness.

Forty-four of these dyes gave equivalent shades on desulfured and undesulfured rayon staple. All but two dyes gave identical lightfastness results on both desulfured and undesulfured rayon. The other twenty-five dyestuffs produced significant undesirable shade changes on the undesulfured rayon. In general, these dyes also had relatively poor lightfastness, but washfastness was unimpaired when they were used on undesulfured rayon.

All twenty-five direct dyestuffs that showed shade differences on undesulfured rayon were of the metal-complex type.

Of the forty-four dyestuffs that produced identical shades on both kinds of rayon, only two were metallic complexes.

Apparently sulfur compounds *in situ* in the rayon fiber do not affect the shade of the metal-complex dyes. The sulfur or the sulfur compounds must first become dispersed or dissolved in the dyebath before they adversely affect the dyestuff.

Other classes of dyes (vats, naphthols, and sulfurs) were not investigated because the normally high alkalinity of dyeing methods used with them could be expected to desulfur the rayon.

Economic advantages of processing rayon in the undesulfured state has been estimated at about 0.3¢ per pound.—*James H. Cox, Chairman and Speaker for the Southeastern Section*

## High-Pressure Steam Widens Continuous Dyeing

**Continuous dyeing of vat, soluble vat, naphthol, and sulfur colors is an old story, but application of direct, disperse, acid, and metal-complex dyes has generally been on a batch basis.**

The development of a pressure seal for a steaming chamber, patented by Konrad Peter AG, Liestal, Switzerland, makes possible the continuous dyeing of more classes of dyes on a variety of fabrics.

Direct colors applied to rayon and steamed at 120 C. for 30 seconds show appreciable increase of color value over samples steamed at 104 C. Complete penetration of color is achieved in a two-minute steaming at 120 C.

Dye solubility and appearance of the samples in these tests were improved by the addition of 100 grams per liter of urea and 1 to 5 gpl. sodium pyrophosphate.

Color yields by the pressure-steaming method are somewhat less than by pad-roll or pad-jig methods. Labor and time are saved by pressure steaming, which should more than offset the lower yields.

Disperse dyes applied to triacetate fibers give better yields by pressure-steam than by the pad-roll method. Polyester fibers show acceptable results if steamed at 120 C., but yields are not as good as with normal carrier dyeing.

Washfastness of dyeings made with low- and high-pressure steaming methods is not as good as with carrier dyeing.

Acrylic fibers respond well to high-pressure steaming. Excellent yields and comparable washfastness place high-pressure steaming on a par with older methods. Low-pressure steaming is not as good.

Acid dyes applied to nylon by the pressure-steam process give intermediate results with high-pressure steam as compared to pad-jig or pad-roll methods, according to the dye used.

Barré effects common to acid dyeing on nylon are less when the goods are padded, dried, and steamed at high pressure than when they are dyed normally or steamed without drying.

The metal-complex dyes, with few exceptions, give good results on nylon when they are fixed by high-pressure steam. Barré effects are much less than would be expected for this class of dyes, particularly if an intermediate drying step is used.

Blends that require different types of dyes can be handled successfully by the pressure-steam process described, providing the dyes are chosen to suit the work.—*Dr. Richard Kern, Sandoz Ltd.*

## Secret to Verel Dyeing: Low Temperature

**Troubles that developed in dyeing Verel at temperatures usually employed in dyeing most other man-made fibers have been eliminated by dyeing at 160 F.** At this temperature, no delustering, distortion, matting, or loss of hand occurs.

Dyeings made at 160 F. have all the fastness properties associated with dyeings made at 212 F. Raw stock, packages, skeins, and piece goods are well dyed at 160 F.

Selected disperse, neutral-dyeing, premetalized, and basic or cationic dyes can be successfully applied with the aid of Verel Dyeing Assistant in amounts of 1 to 6% on the weight of the goods. (This product is an organic phosphate plus emulsifiers.) Dye exhaustion is good, and little or no changes in formulas predicated on a 212 F. dyeing temperature are needed. Dyeings are level, and fiber properties are well retained.

Pile fabrics of all types benefit by the low-temperature dyeing procedure, which opens up several categories of Verel-bearing goods that gave serious trouble when dyed at 212 F.—*R. J. Fortune, Tennessee Eastman Co.*

Here's how Rohm & Haas textile service makes sure your vat dyeing operation gives you *all* the profit you ought to be getting.

First, skilled technicians check your dyebath formulations—right on the machine, jig, package dye unit, or continuous range—with high precision electronic equipment. Then, from data collected in this way, we work out the optimum formulation for each shade . . . for more uniform dyeing, top efficiency, best color yield, increased production.

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## ANNOUNCING NEW DU PONT SPONGE-CORE PACKAGE DYEING PROCESS

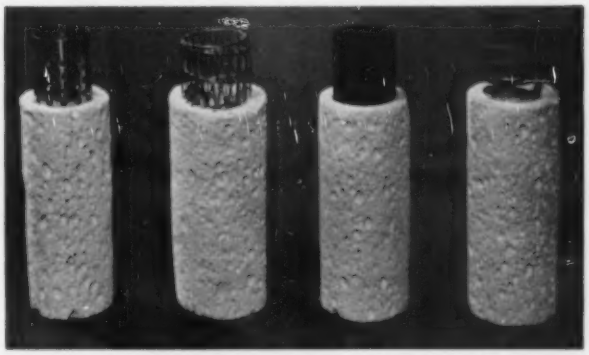
Du Pont technicians have developed a new and unique process for package dyeing which compensates for shrinkage, swelling or bulking of yarns of all types during dyeing. Standard dye tubes of stainless steel, fiber or springs are inserted into sponge cores, which are highly compressible and work toward relieving the forces created by the yarn during package dyeing procedures.

The Du Pont Sponge-Core Package Dyeing Process has been satisfactorily demonstrated on the following yarns:

**High-bulk "Orlon"* acrylic fiber**
**Filament nylon—without preshrinking**
**Filament "Dacron"* polyester fiber—without preshrinking**
**Rayon (dyed with vat and direct dyes)**
**Mercerized cotton sewing thread**

Prior to this sponge-core development, cotton windings, knitted sleeves or a combination of both have been used as package, pressure compensators. Sponge cores offer the package dyer a useful tool for eliminating the cost of preshrinking or bulking, depending on the yarn to be dyed, and the added coning operations resulting from these pretreatments.

Almost all experience to date has been with the use of Du Pont cellulose sponges having a special grain orientation designed for this particular end use. Polyurethane, rubber and other sponge materials are being investigated. Information pertaining to their particular advantages will be published as developed. In the meantime, call your Du Pont representative for more detailed information on the new Du Pont Sponge-Core Package Dyeing Process.



**Du Pont Cellulose Sponge Cores are available in a range of sizes and thicknesses. The photograph shows half-inch-thick sponges on four different dye tubes. The general trend in requests for samples has been for ½" thick, 6¾" long, although other samples have been supplied up to ¾" thick and 7" long, the size depending on the quantity of yarn and the type of dye tube to be used.**

*Du Pont's registered trademarks

# news from Du Pont

## DU PONT DYES RECOMMENDED FOR WIDE VARIETY OF SYNTHETIC FIBERS

Polyester, acrylic, modacrylic, nytril, triacetate are all generic names for synthetic fibers now in common use and each requires a particular set of dyeing methods and formulations. Du Pont has available detailed dyeing information on all these fibers and many others. Methods for dyeing various synthetic fibers will be presented in a continuing series in future advertisements, and for more detailed information on any specific fiber your Du Pont district office can provide you with comprehensive technical bulletins.

### How to DYE "Kodel"* Polyester Fiber

"Kodel" can be dyed with disperse dyes and with disperse-developed dyes. A carrier is used for more efficient exhaust at 190° to 212° F. The fiber has poor affinity for other classes of dyes.

A carrier is not required when the fiber is dyed at 250° F. Selected Du Pont "Acetamine"†, "Celanthrene"† and "Latyl"† disperse dyes are recommended by Du Pont for application to "Kodel". Aqueous carrier dyeing with disperse dyes should be carried out in the temperature range of 205° to 212° F.

Carrier selection for use in applying disperse dyes to "Kodel" is particularly important from the standpoint of levelness and penetration of the dyes. Volatile esters which steam distill during the dyeing cycle should be handled carefully to prevent condensation in the dyeing equipment and possible fabric spotting.

Phenylphenols and chlorinated benzene carriers are not satisfactory for use in applying disperse dyes to "Kodel" because they cause the dyes to strike too rapidly, giving poor levelness and penetration. And, they are difficult to remove from the fiber by heat-treating after dyeing, thus adversely affecting the lightfastness of some dyes.

The Du Pont Technical Laboratory has evaluated Du Pont disperse dyes on "Kodel" using a dyeing temperature of 205° to 212° F., and employing both Carrier DAC 888 by Cindet Chemical Co. and "Latyl" Carrier A. Ratings for fastness to light, washing, perspiration and hot-dry pressing are available from your Du Pont office.

*Reg. trademark for Tennessee Eastman Co. Polyester Fiber
†Du Pont's registered trademarks

## Expanded Philadelphia Lab Offers Fast Textile Dyeing Service

Do you have a textile dyeing problem? Want the solution quickly? Turn over the tough ones to the Philadelphia District Office where dye experts with a fully equipped laboratory provide efficient service for all of Pennsylvania and Delaware and parts of Ohio, West Virginia, Virginia, Maryland and South Jersey.

The facilities at this 1616 Walnut Street Laboratory include a Fade-Ometer, mixing benches, laboratory dyebaths, drying ovens, Launder-Ometer, skein winding machine, and a standard light for accurately judging dye shades under all conditions. With this equipment, an experienced technical staff is able to do accurate color matching and develop dyeing formulations for any fiber.

These facilities are at your immediate disposal if your mill is in the Philadelphia District. For help on any kind of dye application, get in touch with the office or call in your Du Pont district salesman.

**In the Philadelphia Laboratory this Fade-Ometer is run continuously to determine the lightfastness of dyed fabric samples. Dyebaths and mixing benches appear in the background.**

# news from Du Pont

## Announcing new "Dekatyl"† Blue G

"Dekatyl" Blue G is a new type cationic dye which is especially useful as a base in the production of lightfast navy and black shades on "Dacron" types 64 and 62 polyester fiber. The dye is particularly recommended for deep shades since lightfastness is best at concentrations greater than 2.0% on the "Dacron".

"Dekatyl" Blue G gives the best shade reproducibility when applied in the pH range of 3 to 5. Certain precautionary measures may be necessary when applying this dye to "Dacron" under pressure or in blends with wool. Since a dye of this type will find wide use on numerous fibers and blends, specific application procedures should be obtained from a Du Pont technical representative.

### FASTNESS PROPERTIES

**On "Dacron" Type 64 with "Latyl" Carrier A Present**

| Light (Fade-Ometer) | Rating | Direction of Fade |
|---|---|---|
| 4.0% Control | 4-5 | RD |
| 6.0% Control | 4-5 | RD |
| 4.0% Heat Treated 1 min. at 400° F. | 5-6 | RD |
| 6.0% Heat Treated 1 min. at 400° F. | 5-6 | RD |

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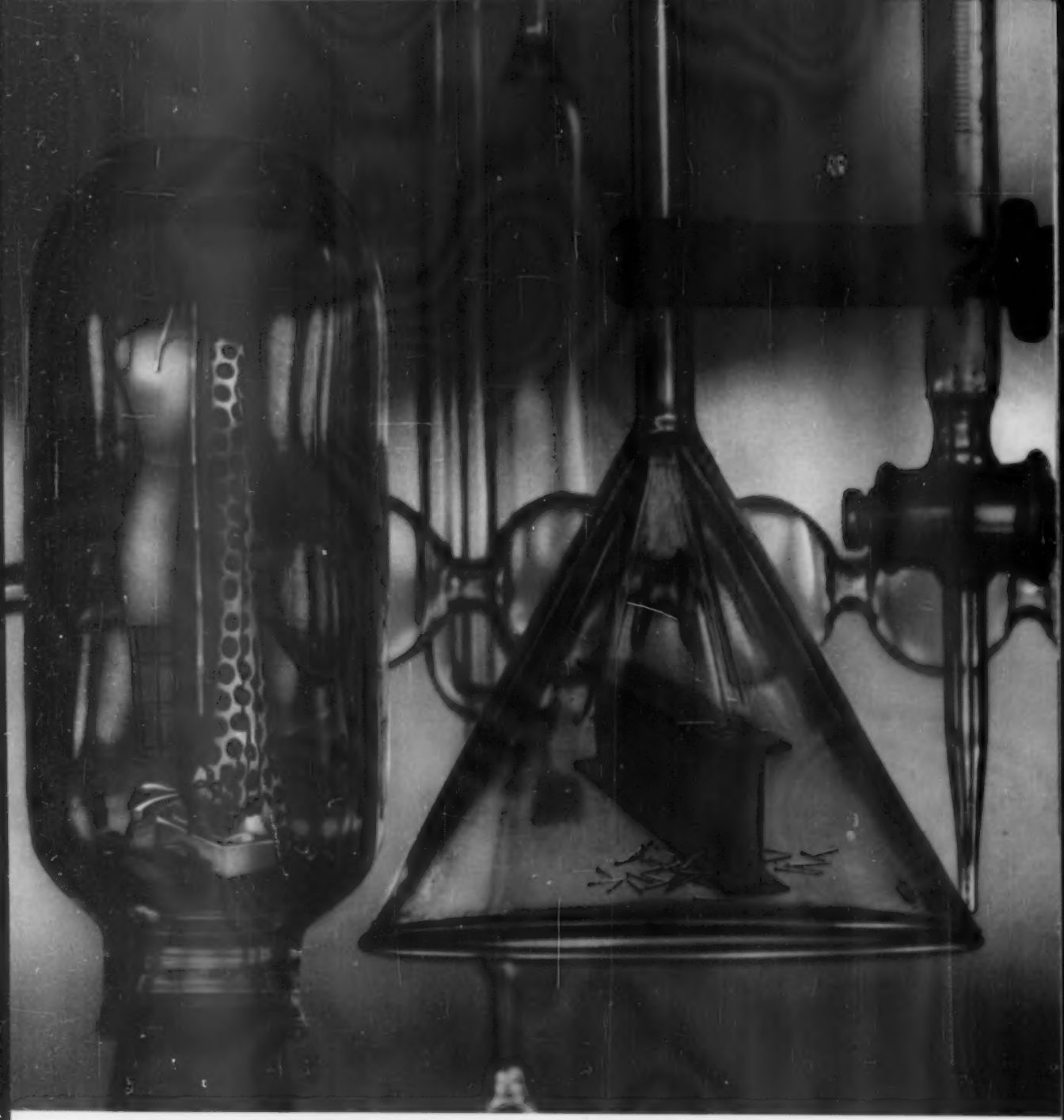

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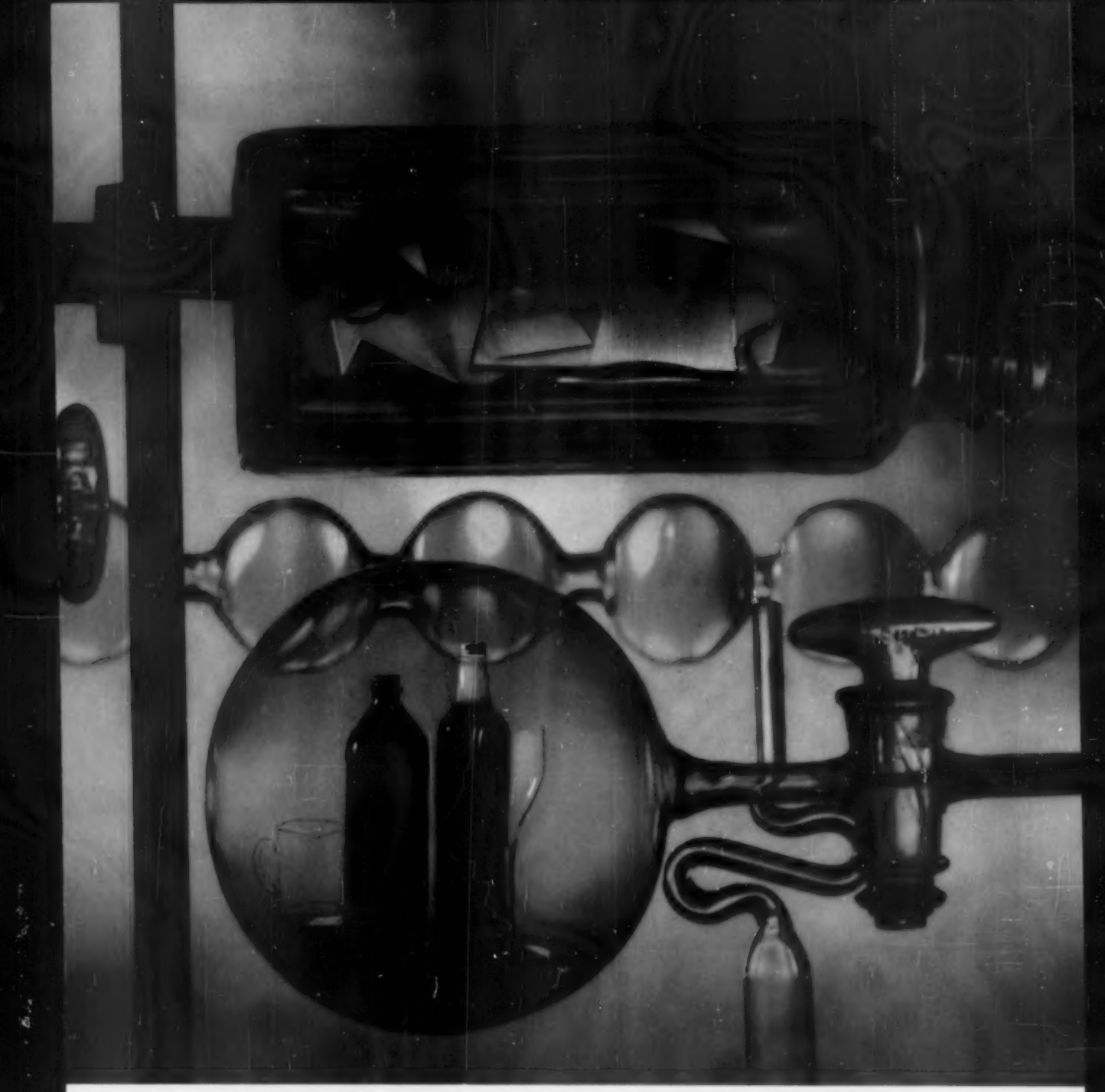


There's more to a sound chemical purchase than the bulk material delivered. You want the special handling and consideration that give you the most mileage out of the chemicals you buy.

And Columbia-Southern consistently comes through with these extra touches.

Take the large gas meter manufacturer who made significant improvements in his trichlorethylene degreasing line by following specific suggestions made by a Columbia-Southern Technical Service Engineer. Or the pulp mill which recently solved a tricky processing problem with the aid of the Columbia-Southern Pulp Laboratory. Or the big bottle manufacturer who cut his soda ash dust losses in half by adopting a simple system developed by Columbia-Southern.

Practical help like this is a basic part of the Columbia-Southern program. It's the reason why so many leading firms—representing many industries—turn to Columbia-Southern for their basic chemicals.

Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in principal cities. In Canada: Standard Chemical Limited.

columbia | southern chemicals

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
A Subsidiary of Pittsburgh Plate Glass Company

Chlorine • Caustic Soda • Caustic Potash • Soda Ash • Ammonia
Solvents • Sodium Bicarbonate • Chromium Chemicals
Barium Chemicals • Sulfur Chemicals • Agricultural Chemicals
Reinforcing Pigments • Calcium Chloride • Hydrogen Peroxide
Muriatic Acid • Calcium Hypochlorite • Titanium Tetrachloride

# THE INHERENT PURITY OF DIAMOND CRYSTAL SALT IS YOUR KEY FOR PRODUCT IMPROVEMENT!

Diamond Crystal CMF (Calcium Magnesium Free) and Louisiana Rock Salt offer textile and dyestuff manufacturers extremely high purity at low cost. The result? Consistently better products for you.

Protect the quality of your finished product! Diamond Crystal CMF (Calcium Magnesium Free) type salt will help you eliminate streaking and off shades caused by calcium and magnesium in the dye bath. Result: Fewer Rejects—Higher Profits.

In addition to CMF, Diamond Crystal Louisiana Rock Salt (from Jefferson Island—one of the purest salt deposits in the world) enables textile operations to use this Louisiana Rock Salt (99% pure at its source) without costly side reactions.

For immediate service and consultation, for all your salt needs, call the nearest Diamond Crystal sales office or write to Diamond Crystal Salt Co., St. Clair, Michigan.

## Diamond Crystal Salt Co.

ST. CLAIR, MICHIGAN

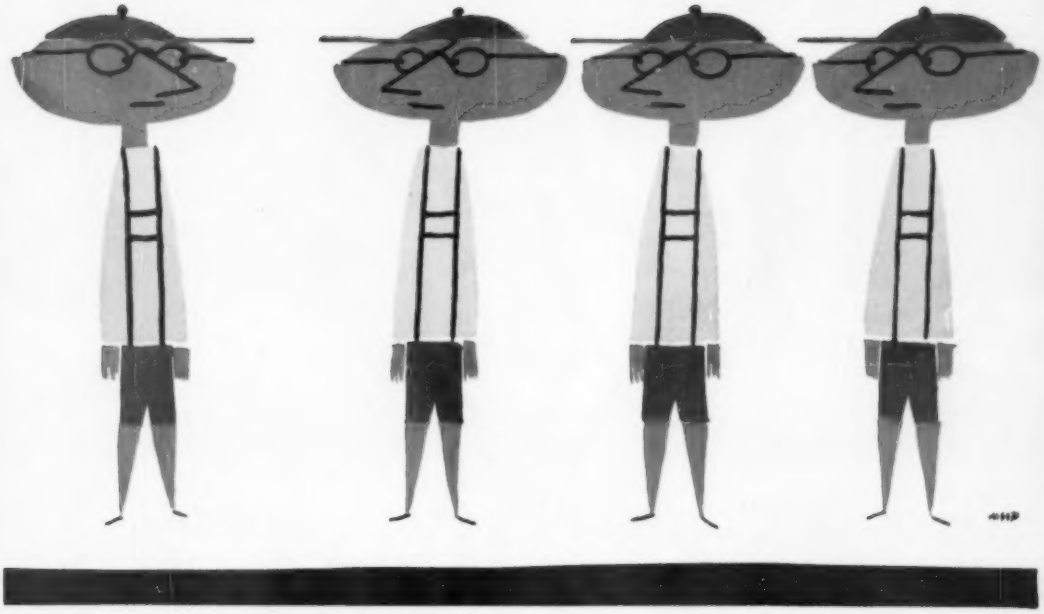
Sales Offices: Akron • Atlanta • Boston • Charlotte
Chicago • Detroit • Louisville
Minneapolis • New Orleans • New York

Plants: Akron, Ohio • Jefferson Island, Louisiana
St. Clair, Michigan



CIRCLE 97 ON READER SERVICE CARD→

PUTNAM PRODUCTS FOR THE TEXTILE INDUSTRY



1/832

# Auxiliary Products

Badische Anilin-and Soda-Fabrik A.G. research has developed the following outstanding dyeing auxiliaries:

- **Basogal P** – completely new approach for leveling vat dyeings.
- **Nekanil AC special** – cationic agent, combining cleansing and leveling properties, especially in acetate and wool dyeing.
- **Uniperol W** – leveling and protective colloid agent for dyeing wool, polyester and polyamide fibers.
- **Uniperol AN** – retarding and leveling assistant for cationic dyestuffs on acrylic fibers.
- **Albigen A** – for leveling and stripping of vat dyeings.
- **Primasol FP** – an entirely new auxiliary for all pigmentation processes.

*We will gladly provide technical information and assistance.*

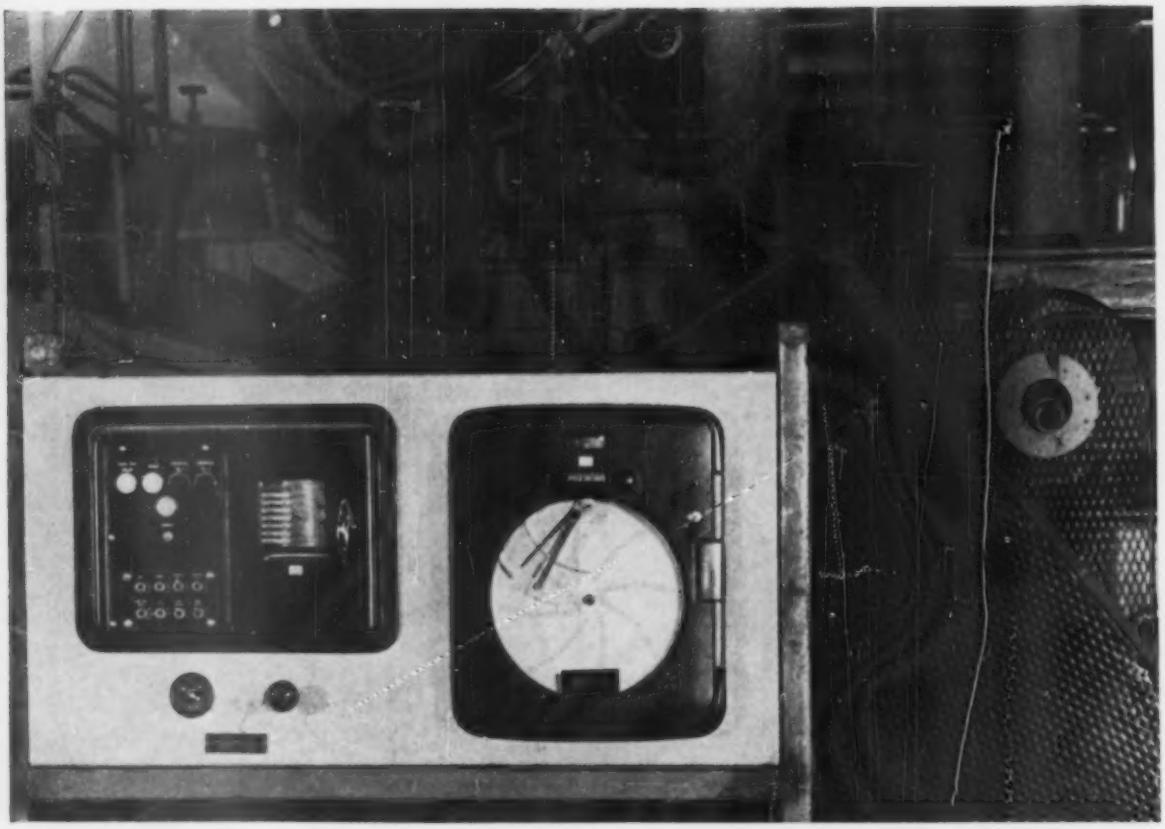
BASF knows how

*In Canada contact:*
**Consolidated Dyestuffs & Chemicals Ltd.**
395 Beaumont Avenue
Montreal 15, Quebec

**PUTNAM CHEMICAL CORPORATION**
BEACON, N.Y. • CHARLOTTE, N.C.

DISTRIBUTORS IN U.S.A. FOR *Badische Anilin- & Soda-Fabrik A.G.*
LUDWIGSHAFEN A. RHEIN, WEST GERMANY

WAREHOUSES: Providence, R. I. • Paterson, N. J. • Philadelphia, Pa. • Greensboro, N. C. • Charlotte, N. C. • Greenville, S. C. • Chicago, Ill. • Los Angeles, Calif.



# New Foxboro Control System makes cloth washing completely automatic!

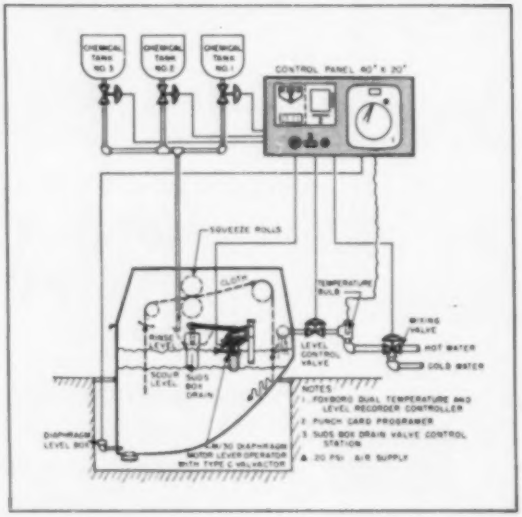
Now you can scour and rinse cloth goods just as simply as your wife does the family wash at home — but with continuous chart records for proof!

A Foxboro Dolly Washer Control System automatically handles the entire washing cycle. It programs the scouring and rinsing operations, adds scouring chemicals, controls rinse water temperatures, controls washer levels . . . even operates suds box drain-off valve.

Everything is completely automatic — everything programmed to the requirements of your mill and your materials. Fast, accurate prepunching of time cycles is assured by the one-minute time marks printed on the 12-inch program card.

In addition, the Foxboro Model 40 Recorder Controller continuously provides you with a written record of temperature and level — proof of uniform treatment, increased production, improved cloth quality, as well as savings in chemicals, water, and steam.

Ask your Foxboro Field Engineer for full details. Or write for new data sheet 220-201. The Foxboro Company, 8412 Neponset Avenue, Foxboro, Massachusetts.



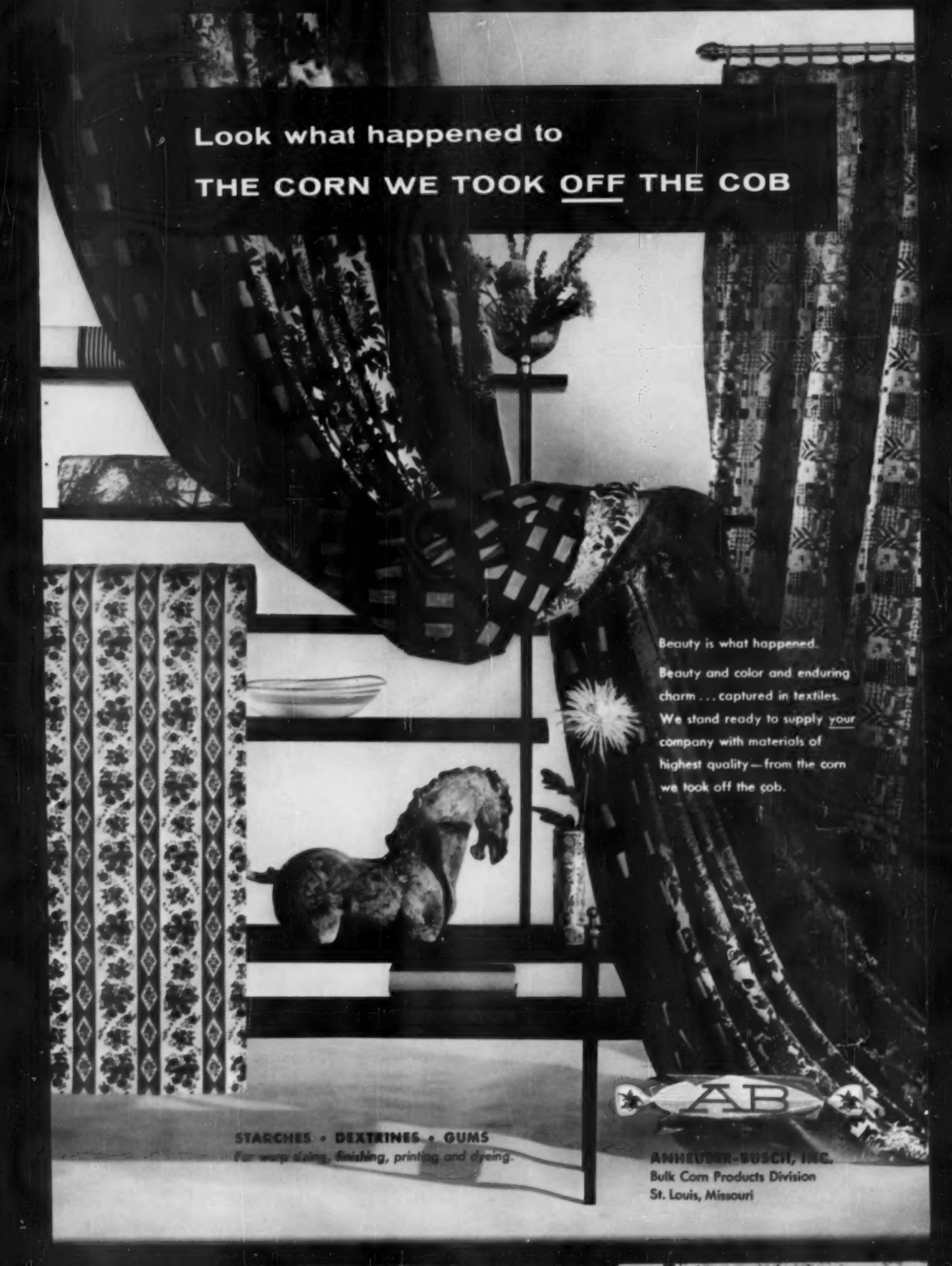

Schematic diagram of Foxboro Dolly Washer Control System.

FOXBORO

REG. U.S. PAT. OFF.



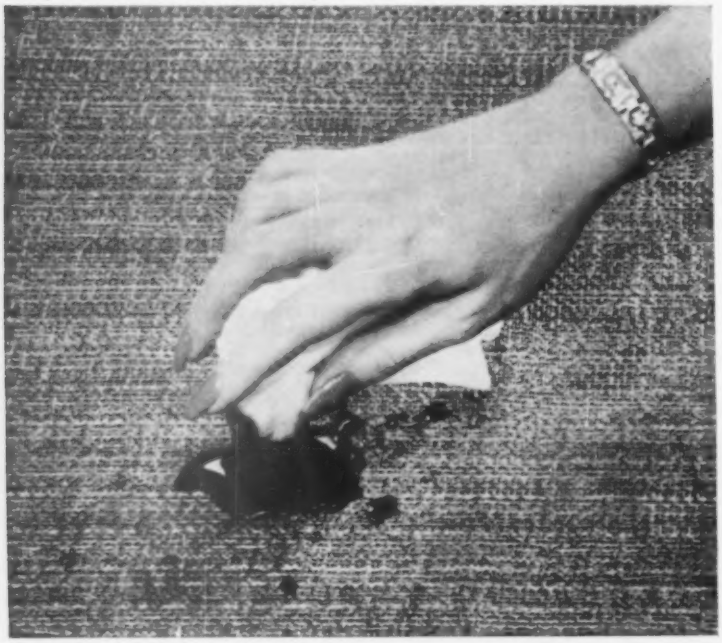
CIRCLE 99 ON READER SERVICE CARD→


Look what happened to
THE CORN WE TOOK OFF THE COB
Beauty is what happened.
Beauty and color and enduring charm . . . captured in textiles. We stand ready to supply your company with materials of highest quality—from the corn we took off the cob.
AB
STARCHES • DEXTRINES • GUMS
For warp sizing, finishing, printing and dyeing.
ANHEUSER-BUSCH, INC.
Bulk Corn Products Division
St. Louis, Missouri

**SILICONE NEWS from Dow Corning**

# How to make good fabrics better

Whatever the fabric, silicones will improve it. Today, there is a Dow Corning silicone finish for every textile construction, every fiber. Ease of application provides important economies which, coupled with maximum performance, represent a more profitable operation in every area and at every level of the textile industry.



## The Syl-mer® Emulsions

*For woolens and worsteds.* Syl-mer 61, an exhausting type silicone emulsion, provides durable water repellency, spot resistance and desirable hand, without high-temperature curing. Practical for all fabrics in which 85% or more of the fiber content is wool or worsted.

*For natural and synthetic fibers and blends.* Syl-mer 72 all-purpose padding emulsion, requires relatively low curing temperature and provides durable water repellency, spot and stain resistance, luxurious hand. In many fabrics, it improves abrasion resistance, tear strength, sewability and wrinkle resistance.

*For deep pile synthetic fabrics.* Syl-mer 73 spray-on emulsion improves surface characteristics of man-made fibers commonly used in pile constructions. It imparts a smooth and luxurious hand, durable water repellency, spot and stain resistance, some increase in luster.

*For cottons and most cotton blends.* Syl-mer 82 padding emulsion provides water repellency that withstands high-temperature laundering as well as dry cleaning. Gives all cottons a smooth, non-greasy hand. Can be used on naphthol-dyed fabrics, including naphthol reds. Compatible with crease-resistant resins and wash-and-wear finishes. In such formulations, it increases tear strength and wrinkle resistance.

## Silicone Softeners

*To soften and improve the hand of any fabric.* Syl-soft® emulsions are available in both padding and exhausting types, affording formulations for use on practically any fiber or textile construction, including knits. In specific instances, the formulation imparts greater tear strength and better sewability.

## Finishes for glass fabrics

*Durability "plus" in industrial and decorative fabrics.* Outstanding examples are the contributions Dow Corning Silicones make to the performance of Fiberglass constructions. In industrial filters, they increase the use life of such fabrics; reduce filament breakage; make cleaning easier. In drapery fabrics of Fiberglass, they impart better hand and drapability, more durability, improved water repellency and spot resistance.

*In the Dow Corning Textile Laboratory, research is continuous on the development of better finishes. Here experiments are being made with a small padding machine while, on the right, a treated fabric is being tested for spray rating.*

For full information on how Dow Corning silicone finishes for textiles can best serve you and your customers, write Dept. 0512.

Your nearest Dow Corning office is the number one source for information and technical service on silicones.

first in silicones

**Dow Corning CORPORATION**
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.



CIRCLE 101 ON READER SERVICE CARD →

# for MAN-MADE FIBERS...

an unexcelled selection of dyestuffs for dyeing and printing

**ASTRAZONS** a very elaborate range of modified basics for Acrylic fibers comprising most shades, price ranges, and fastness properties.

**RESOLINS** dispersed dyestuffs especially standardized for Polyester fibers with new and interesting products just released.

**®ISOLANS** neutral dyeing pre-metallized dyestuffs for Polyamide and Acrylic fibers, including outstanding yellows and greys.

**®TELONS** acid dyestuffs standardized for Polyamide fibers, especially selected from our large assortment of products.

VERONA PHARMA TRADEMARKS REGISTERED

## VERONA DYESTUFFS

A DIVISION OF VERONA-PHARMA CHEMICAL CORPORATION

*Manufacturers of Intermediates, Dyestuffs, Organic and Aromatic Chemicals*

SPRINGFIELD ROAD, UNION, NEW JERSEY

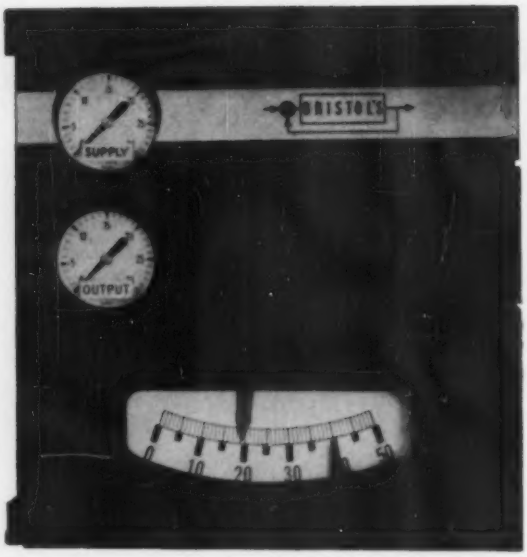
Branches: Haverford, Pennsylvania · Providence, Rhode Island · Rock Hill, South Carolina

*plus the well-known specialty Dyestuffs and Auxiliaries of*

BAYER LEVERKUSEN · CASSELLA MAINKUR

# NEW

BRISTOL'S




# Series 624 A/D* pneumatic controller features simplicity and high control stability

- **Simple modular design for ease of servicing**
- **High control stability for closer process control**
- **Designed for batch-type and continuous processes**
- **Proportional and proportional-plus-reset control models available**

Top control performance with maximum simplicity plus standard Bristol precision measuring elements – those are the key features of the Bristol Series 624 Controller. The 624 use.. the same renowned elements that have earned such a reputation for accuracy and dependability on other Bristol automatic controlling and recording instruments – perfected through wide experience and many years of development.

Self-contained modular design of the control unit speeds servicing. The whole modular unit, consisting of an aluminum casting with working parts made of stainless steel, Ni-Span C, and Neoprene diaphragms, can be removed by taking out only two screws and a link.

Outstandingly compact, the aluminum instrument case (only 8" x 8" x 5" overall) is completely weatherproof. It is designed for either flush, surface, panel, or valve mounting. Attachments for pipe mounting (2-inch pipe) are available. Write for complete data on the versatile and economical 624 A/D. The Bristol Company, 103 Bristol Road, o.3s Waterbury 20, Conn.

*Advanced Design*

**CONTROLLERS OFFERED FOR:**

**PRESSURE AND VACUUM:** Ranges from full vacuum to 10,000 psi.

**TEMPERATURE:** Ranges from —100°F to +1000°F.

**FLOW AND DIFFERENTIAL PRESSURE:** With mercury-type manometer and dry-type differential unit.

**LIQUID LEVEL:** With bulb unit and mercury manometer and dry-type differential unit.

**HUMIDITY:** Zero to 100% relative humidity.

**CONTROL UNIT CHARACTERISTICS:**

**PROPORTIONAL BAND:** 0-400% continuously adjustable, direct- or reverse-acting.

**RESET:** 0.1 to 50 repeats per minute.

**AIR PILOT:** Non-bleed type.

**PILOT CAPACITY:** 3.0 scfm.

**FREQUENCY RESPONSE:** Flat to 300 cycles per minute.

**TEMPERATURE STABILITY:** Less than 0.25% change in the output pressure for 90°F temperature change.

**MATERIAL:** Aluminum housing; 316 stainless steel internal parts; Ni-Span C feedback element.

**BRISTOL**... for improved production through measurement and control

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



CIRCLE 102 ON READER SERVICE CARD

CIRCLE 103 ON READER SERVICE CARD ➤

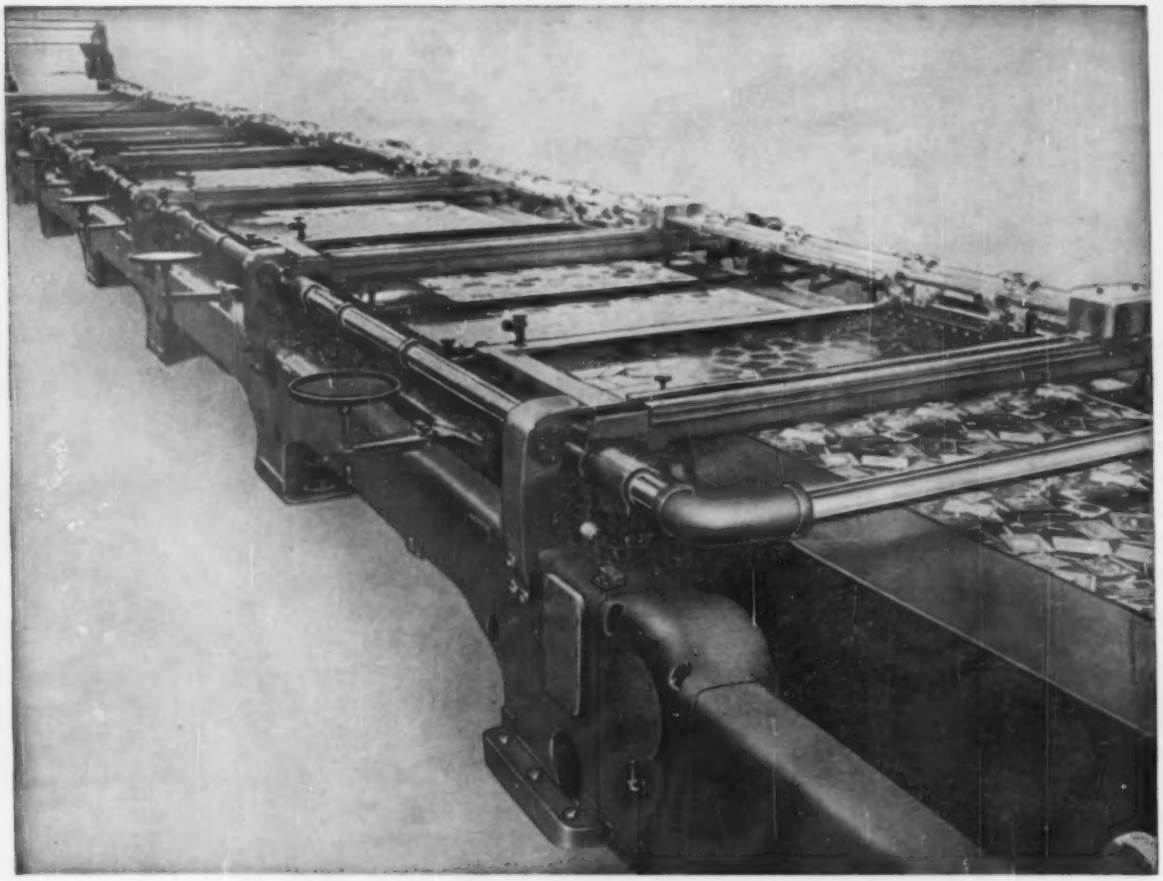
*Improve quality–*

*lower handling costs with...*

**GLOBE®**
*easy flow starch*

**WRITE OR PHONE** *Corn Products for expert technical assistance... helpful data on these fine products for the Textile Industry:*
**GLOBE® · EAGLE® · FOXHEAD® · TEN-O-FILM® and CLARO® starches · GLOBE® · EXCELLO® dextrines.**

CORN PRODUCTS COMPANY INDUSTRIAL DIVISION · 10 East 56 Street, New York 22, N. Y.



# Screen Print up to 12 yds. of Fabric Per Minute with an **ICHINOSE-TYPE** Patented MULTI-COLOR AUTOMATIC SCREEN PRINTING MACHINE

The Ichinose Screen Printing Machine, with more than 60 patented features, screen prints all kinds of fabric perfectly in up to 21 colors at nearly double the speed of other machines on the market. Finished prints are of highest quality, clean, sharp, accurate and far superior to hand or roller prints.

Ichinose means greater economy, too, both in initial cost and in operation and maintenance. It consumes less power, steam, and dye paste, while cutting labor costs to only two operators per machine. Change of design and colors takes less than 30 minutes.

Machines with various different repeats up to 72" and fabric widths up to 60" can be supplied.

To ensure complete satisfaction, all Ichinose machines are installed by our own technicians anywhere in the world. Write today to Dept. TW8 for illustrated catalogue and printed fabric samples.

**TOSHIN KOGYO CO., LTD.**

P. O. Box 367, Osaka Central
OSAKA, JAPAN
(Cable: Autoscreen Amagasaki)

Ichinose

**North American Representative:**
**Edward S. Rudnick, Representative**
**Olympia Building, P.O. Box 244**
**New Bedford, Mass.**

# SEND YOUR DARK SHADES TO MARKET PROTECTED BY THE OUTSTANDING FASTNESS OF EASTMAN POLYESTER DYES

**Call in your Eastman representative to tell you all about the performance advantages and economy of these dyes**

Darker shades of polyester fabrics and their blends are more in demand than ever.

In step with this trend, Eastman offers an expanding series of polyester dyes, providing the best all 'round fastness characteristics of polyester dyes currently available.

Specifically developed for use with polyester fibers, these dyes exhibit outstanding fastness to washing, light, sublimation, crocking, perspiration, dry cleaning and wet pressing.

Equally important are their excellent processing characteristics...good build-up, good exhaustion and outstanding leveling properties. Thus, darker shades of navy, brown and grey are economically obtained.

Dyeing with Eastman Polyester Dyes is easily accomplished with carriers or under pressure at elevated temperatures. Fibers can be readily dyed in tow, tops, stock, or fabric forms. Fabrics of polyester filament can be conveniently dyed in jigs. Fabrics woven of spun polyester yarns alone or blended with cotton, viscose or wool can be easily dyed in dye-becks.

Get the full story of this outstanding line of dyes for polyester fabrics from your Eastman representative.

## Eastman Polyester Dyes

**Eastman Polyester Dyes are sold in the United States by EASTMAN CHEMICAL PRODUCTS, INC., subsidiary of EASTMAN KODAK COMPANY, in Kingsport, Tennessee; Ladi, New Jersey; and Greensboro, North Carolina. On the West Coast through WILSON & GEO. MEYER & COMPANY, San Francisco, Los Angeles, Portland, Seattle, Salt Lake City. In Canada through CLOUGH DYESTUFF CO., LTD., St. Laurent, P. Q.**

* Try this formula on your next light navy lot.
4% Eastman Polyester Blue 3RL
4% Eastman Polyester Blue BLF
0.3% Eastman Polyester Orange 2RL
5 g. / l. o-phenyl phenol type carrier
Material: Polyester
Bath Ratio: 30:1
Dyed 1 hour at boil

Polyester Yellow RL
Polyester Yellow W
Polyester Yellow 5R
Polyester Red B
Polyester Red 2G
Polyester Dark Red FL
Polyester Pink RL
Polyester Pink LB
Polyester Brilliant Orange 2RL
Polyester Orange 3RLN
Polyester Blue GLF
Polyester Blue GR
Polyester Blue 3RL
Polyester Blue BLF
Polyester Blue GB
Polyester Navy G
Polyester Violet R
Polyester Black RB
Polyester Dispo Black 5

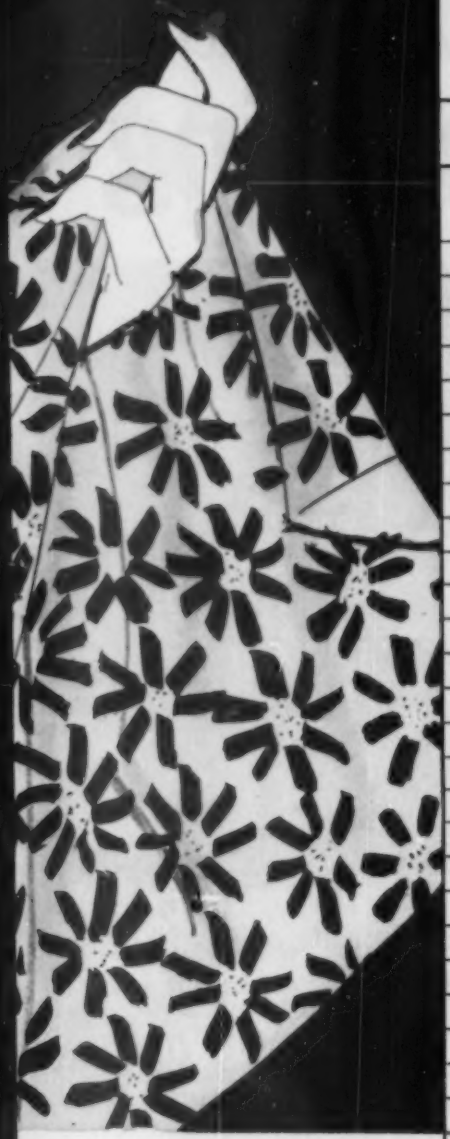
# NEW test results on drycleanability

TO CUT COMPLAINTS of color loss in drycleaning the A.A.T.C.C. recently adopted a new and more stringent test for predicting color behavior in three commercial drycleanings.

FOR MORE SATISFIED CUSTOMERS make your selections from the ARIDYE and AQUAPRINT COLORS charted here. *Most of these colors also give you fastness to light and washing that meets virtually any end-use requirement.*

ARIDYE and AQUAPRINT pigment printing colors are equally advantageous for fast-color printing cottons, synthetics and blends for a wide variety of apparel and household uses.

Samples and full information on any or all these colors are yours for the asking. Simply write or phone the Color & Chemicals Division office nearest you.



# ARIDYE-AQUAPRINT COLORS

**Which provide the highest degree of fastness to drycleaning**

TESTED IN ACCORDANCE WITH NEW A.A.T.C.C. TEST No. 85-1960

| ARIDYE SERIES (water-in-oil emulsion system) | | | | AQUAPRINT SERIES (oil-in-water emulsion system) | | | |
|---|---|---|---|---|---|---|---|
| Colors | Depths of Shade | | | Colors | Depths of Shade | | |
| | 1:2 | 1:10 | 1:100 | | 1:2 | 1:10 | 1:100 |
| Chartreuse | ★ | ★ | ★ | Chartreuse | ★ | ★ | ★ |
| Yellow 3G | ★ | ★ | ★ | Yellow 3G | ★ | ★ | ●● |
| Yellow R | ★ | ★ | ★ | Supra Yellow R | ★ | ★ | ★ |
| Yellow 3R | ★ | ★ | ★ | Yellow 3R | ★ | ● | ●● |
| Golden Yellow RF | ★ | ★ | ★ | Golden Yellow RF | ★ | ★ | ★ |
| Yellow K | ★ | ★ | ★ | Supra Yellow K | ★ | ★ | ★ |
| Yellow RK | ★ | ★ | ★ | Yellow RK | ★ | ★ | ★ |
| Orange R | ★ | ● | ● | Supra Orange R | ★ | ● | ● |
| Orange 2R | ★ | ★ | ★ | Orange 2R | ★ | ★ | ★ |
| Scarlet RD | ★ | ★ | ★ | Not available in this series | | | |
| Pink Y | ★ | ★ | ★ | Pink Y | ★ | ★ | ★ |
| Brill. Fast Pink 3B | ★ | ★ | ★ | Brill. Fast Pink 3B | ★ | ★ | ★ |
| Fluorescent Pink B | ★ | ★ | ★ | Fluorescent Pink B | ★ | ★ | ★ |
| Red B | ★ | ★ | ● | Supra Red B | ★ | ★ | ● |
| Red 3B | ★ | ★ | ● | Supra Red 3B | ★ | ★ | ● |
| Red RF | ★ | ★ | ● | Supra Red RF | ★ | ★ | ● |
| Brilliant Red | ★ | ★ | ★ | Brilliant Red | ★ | ★ | ★ |
| Brill. Fast Fuchsia | ★ | ★ | ★ | Brill. Fast Fuchsia | ★ | ★ | ★ |
| Violet 3RD | ★ | ★ | ★ | Violet 3RD | ★ | ★ | ★ |
| Violet 4B | ★ | ★ | ● | Supra Violet 4B | ★ | ★ | ★ |
| Royal Blue R | ★ | ★ | ★ | Royal Blue R | ★ | ★ | ★ |
| Blue 3G | ★ | ★ | ● | Supra Blue 3G | ★ | ★ | ● |
| Blue 4G | ★ | ● | ● | Not available in this series | | | |
| Blue 5G | ★ | ★ | ● | Not available in this series | | | |
| Green B | ★ | ★ | ★ | Supra Green B | ★ | ★ | ★ |
| Green Y | ★ | ★ | ★ | Supra Green Y | ★ | ★ | ★ |
| Green 2K | ★ | ★ | ★ | Green 2K | ★ | ★ | ★ |
| Green 2KB | ★ | ★ | ★ | Green 2KB | ★ | ★ | ★ |
| Brown Y | ★ | ★ | ★ | Brown Y | ★ | ★ | ★ |
| Brown R | ★ | ★ | ★ | Supra Brown R | ★ | ★ | ★ |
| Brown 3K | ★ | ★ | ★ | Brown 3K | ★ | ★ | ★ |
| Brown 4K | ★ | ★ | ★ | Brown 4K | ★ | ★ | ★ |
| Gray 2B | ★ | ★ | ● | Not available in this series | | | |
| Not available in this series | | | | Gray 3B | ★ | ★ | ● |
| Not available in this series | | | | Gray 4B | ★ | ★ | ● |
| Black K | ★ | ★ | ★ | Supra Black K | ★ | ★ | ★ |
| Black 2K | ★ | ★ | ★ | Not available in this series | | | |

★ Suitable ● Slight color loss ●● Moderate color loss

The fastness ratings given are based on prints for each color in 1:2, 1:10 and 1:100 cuts. Ratings may be different in longer cuts. Prints were made on 80 x 80 cotton and then dried and cured for 3 minutes at 300° F.

Aridye® COLORS

Aquaprint® COLORS

Interchemical CORPORATION

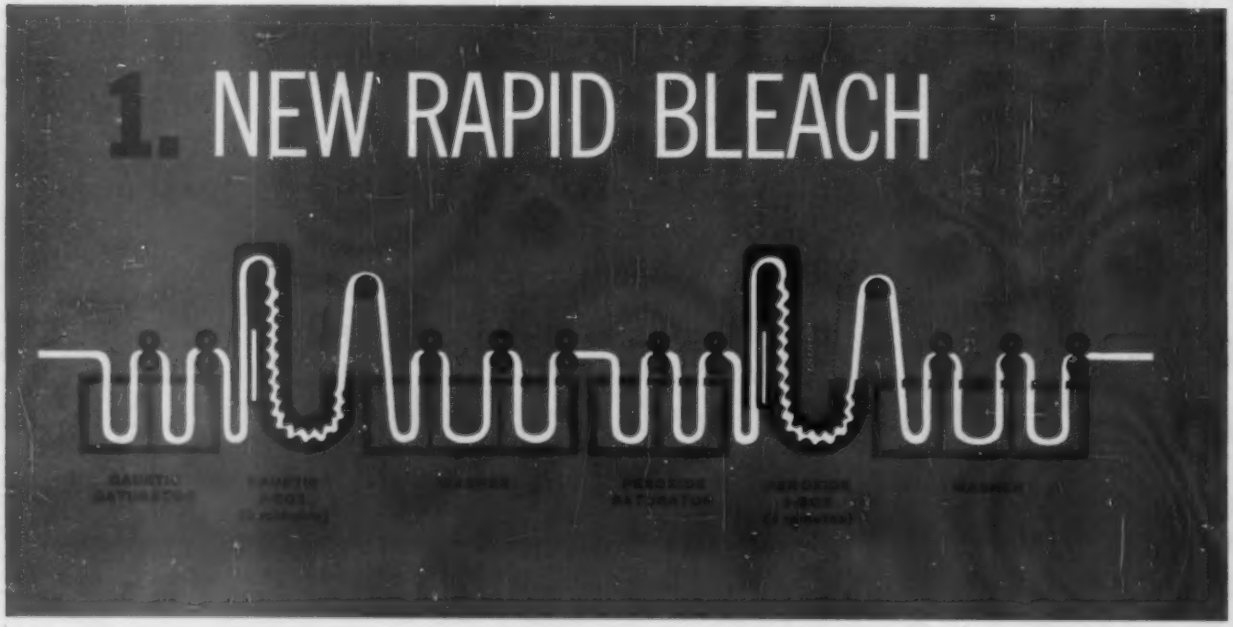
*Color & Chemicals Division*

Pawtucket, R. I. • HAWTHORNE, N. J. • Rock Hill, S. C.

CIRCLE 107 ON READER SERVICE CARD

**From Du Pont**—originator of Solo-Matic* Bleaching

# Two new cost-cutting




## ADVANTAGES

- **Cuts cloth storage time to as low as 8 minutes in each J-box**
- **Cuts J-box costs up to 75%**
- **Eliminates bruises, rub marks, creases**
- **Improves dyeing quality**

## DESCRIPTION

Rapid Bleach is a new continuous process for medium to heavyweight fabrics that can improve bleaching quality . . . and give fabrics high absorbency for excellent dye receptivity. It's a continuous, compact, fast bleaching process that incorporates a caustic pre-treatment in the first J-Box and reduces mechanical handling operations. Rapid Bleach can be adapted to any continuous or semi-continuous open-width system . . . and is specially suitable for hard-to-handle heavyweight fabrics that are susceptible to bruising.

---

## HOW YOU CAN PROFIT FROM DU PONT'S PROCESSES . . . SERVICES . . . PRODUCTS

Whether or not you use any one of the Du Pont developed bleaching processes, you can count on the advice and help of an experienced Du Pont Technical Representative. He will help you with any bleaching problem that might arise or, if you wish, he can conduct a confidential survey of your entire bleachery to pinpoint where and how you can save money, improve bleaching.

Du Pont bleaching agents ensure excellent uniformity and high bleaching efficiency. All are thoroughly tested and proved by successful mill experience. All are available from convenient shipping points. Du Pont offers modern bleaching processes, technical services and quality products to help you keep *your* bleaching quality high—and your costs low. Use them and profit!

ALSONE* hydrogen peroxide activator  SOLOZONE* caustic peroxide  PEROXY* sodium peroxide

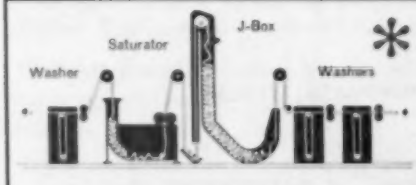
# bleaching processes

## ADVANTAGES

- **Reduces process time up to 50%**
- **Doubles production in the same space**
- **Uses present equipment**
- **High-quality bleaching**

## DESCRIPTION

This new high-speed bleaching process for kiers and package machines is a pressurized or high-temperature system that eliminates the need for caustic boil pre-treatment. The Pressure Bleaching process is used in cases where a plant's output or space does not warrant a continuous setup . . . can be easily adapted to present equipment. All types of cotton fabric, yarn and raw stock can be bleached uniformly at the lowest cost.




**DU PONT SOLO-MATIC** is an advanced single-stage process for high-speed rope-form bleaching. It can double your production in the same floor space or maintain the same production in half the space. Solo-Matic is now helping more than 25 major mills improve bleaching quality and trim costs. With the addition of Rapid Bleach and Pressure Bleaching, Du Pont processes cover all phases of cotton bleaching. No matter what your needs, Du Pont has a modern process to help you.

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...a sensational NEW detergent developed by Procter & Gamble

Zyrol solves your fabric preparation problems... gives you the dependable results you want. It's because Zyrol offers an amazing combination of properties never before available in a single product...

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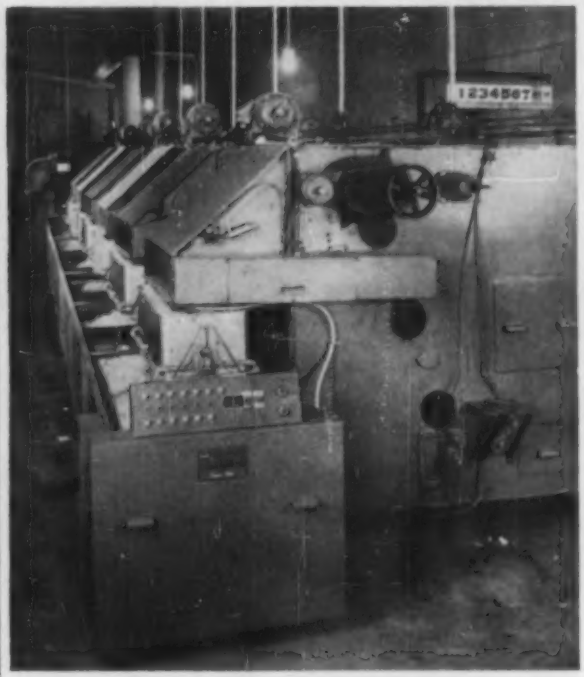
# BLEND COTTON BY DENSITY THROUGH WEIGH PANS



**NOW AVAILABLE:** An economical **conversion** of existing opening hoppers to weighing feeders by the addition of a scale mechanism. To be ranged with the standard sandwiching SYNCROVEYOR (control panel assembly) and plucking cylinder (The SYNCROBLENDER).

**OBJECT:** To improve process uniformity and efficiency throughout any Blend process by the use of this PRODUCTION INSTRUMENT.

**HOW IT IS DONE:** Fiber properties can very widely. Ultimately, the basic yarn evenness requirement is to place the same number of fibers of each density (represented by the laydown) in each inch.

Therefore, considerate it "fact" that stock representation per yard of picker lap is from one bale per hopper and select and laydown bales accordingly Meter consistently predetermined increments of ounces . . . of each density (fineness) designation in short term control intervals of seconds. Handle reworkable waste through 1 weigh pan.

No additional floor space, connected horsepower, or labor required for **SYNCROMATIC SYSTEM.**

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FIBER CONTROLS CORPORATION
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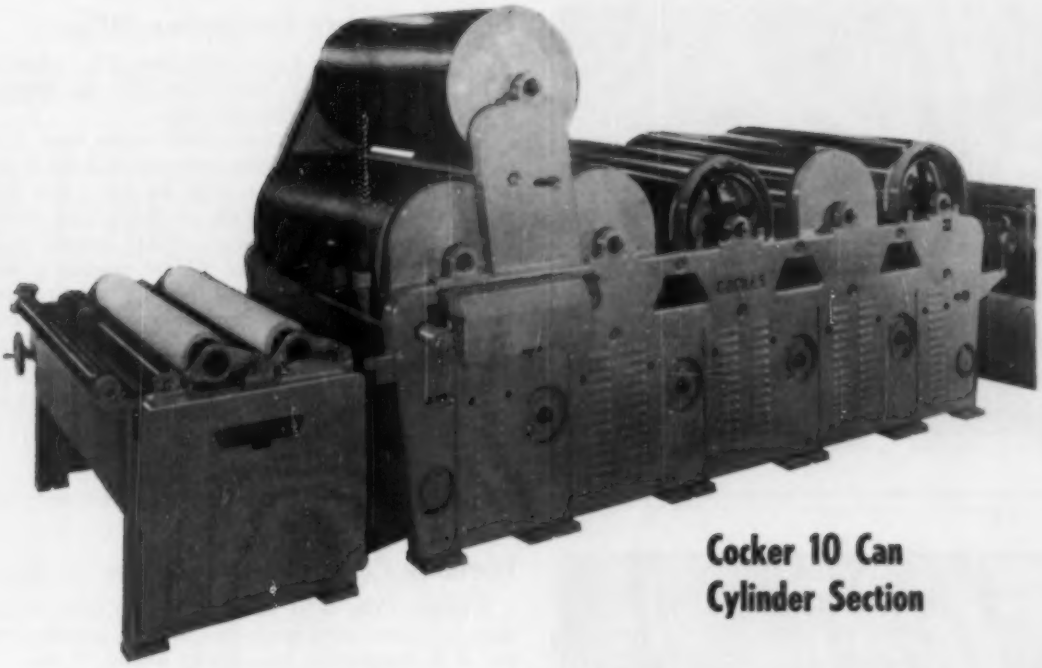
CIRCLE 250 ON READER SERVICE CARD

# The Extras are FREE



**Cocker 10 Can Cylinder Section**

Prices of Cocker Cylinder Sections are in line with those of other makes, so Cocker's many valuable extra features actually cost you nothing. Here are a few.

## Extra Convenience

Any cylinder can be removed individually . . . bottom cans may be taken out without first removing the top ones. All cylinders are interchangeable. Snap-out venting panels and light metal sprocket guards can be easily removed by one man. Jack foot screws permit easy adjustments. Low silhouette permits any man of normal height to watch the warp on standard top cans without using a climbing platform.

## Extra Equipment

All piping and all necessary steam equipment is furnished on every machine.

## Extra Features

Cocker Sections have • Stronger frames, ball bearings and chain drives • Split sprockets • Two stainless steel vacuum breakers • Jack screw idlers • Teflon Coated ASME cylinders (approved and labeled) • Cocker designed bracing between bottom and top cylinders eliminates sway or rock at high speeds and under heavy loads. No Cocker slasher has ever needed additional bracing after installation.

## PLUS Accurate Control

Each cylinder can be set at any temperature and drying steps can be accurately graduated to obtain any desired result.

Don't pay for something you don't get. Let us give you full information.

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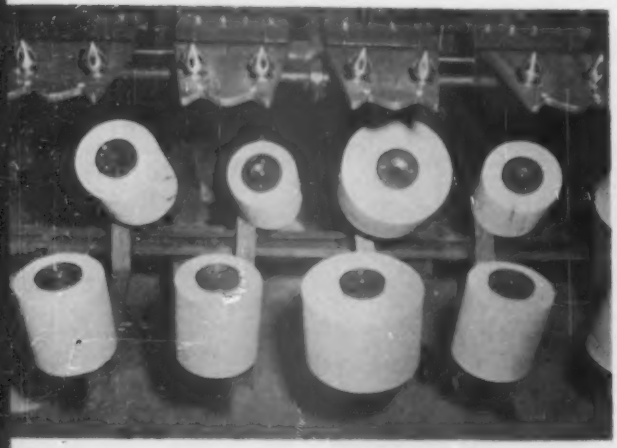
# TEXTILE WORLD . . . COST CUTTERS

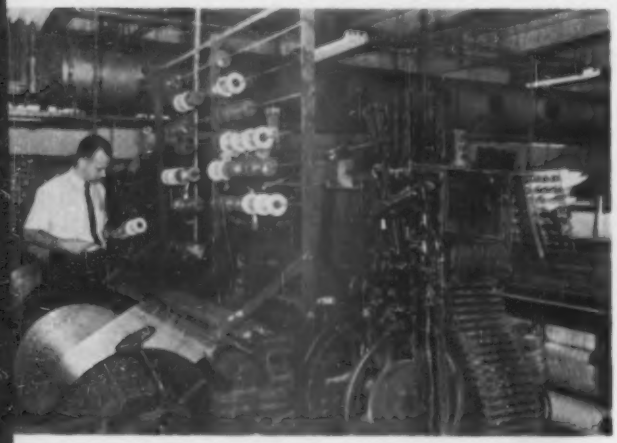


## Creel Increases Production 30%

American Thread Co.'s Tallapoosa (Ga.) plant has increased production at its doublers 30% and improved quality by building a two-ply creel.

Problem was that conventional creels used at the doublers could accommodate only one package of yarn, and they put too much tension on fine yarns being plied into thread yarn. This condition kept production well under the required 18,000 pounds a day needed to meet schedule of 90,000 pounds a week.

This bottleneck developed after a modernization program that increased over-all production 22,000 pounds per week. Superintendent W. G. Littlefield put his technicians on the job. In short order, they came up with the creel shown here, which permits yarn to be pulled up instead of out.



## Portable Creel Cuts Downtime

Running from 6 to 66 metallic-yarn ends in continuous-filament man-made-fiber warps is common practice at A. Schottland, Inc., Rocky Mount, N. C.

So Schottland pre-engineered a creel for the metallic yarn that eliminates the old makeshift creels.

In the photo, Howard Jobe, assistant manager, shows how easy it is to replace a run-out spool with a full one. He just loosens a nut that's thumb-tight on a rod that supports the spools.

Weavers can now replace spools quickly to reduce loom downtime and increase efficiency.

The creel even has its own whiproll, a polished rod supported by a brace from the creel stand.

Only four bolts hold the creel to the loom, so it's easy to remove or replace it as needed.

## Now–Clean Bobbin Tips in Seconds

Parkdale Mills, Inc., Gastonia, N. C., has developed a method of cleaning bobbin tips that makes it easy for one man to refurbish 22 bobbins per minute compared with 2 to 4 under the old hand-cleaning method.

The device consists of two ordinary spindles mounted on a wooden support as shown in the photograph. A band around the spindle whorls (beneath the support) is rigged to a ⅓-hp. motor that revolves the spindles.

The operator drops the bobbins on the spindles, and as they spin he presses a piece of steel wool on the top of each one. In a matter of seconds old paint is removed and the tips receive a high polish. Polished bobbins are dropped into the truck on which the spindle assembly rests.

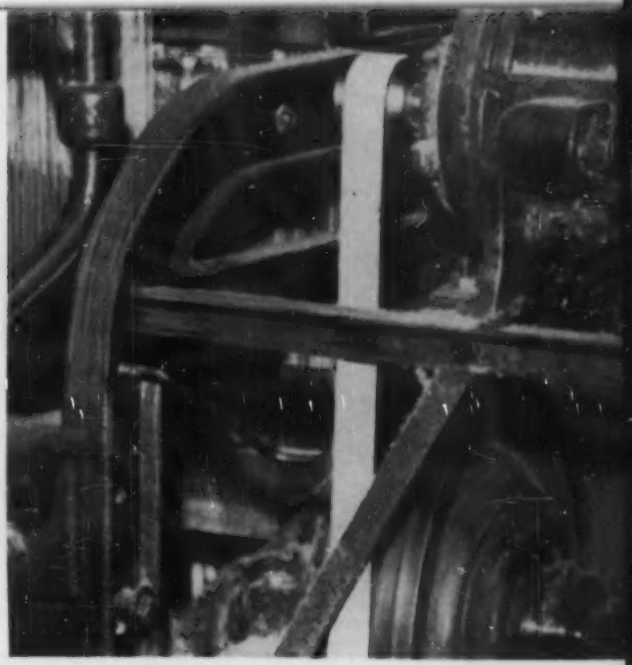
## Slower Shuttles—But More Production

An experiment in slower shuttle speeds on narrow-fabrics looms at Westboro Weaving Co., Greenville, S. C., has paradoxically resulted in more output per shift on the looms.

By installing Extremultus belts on the loom drive, Westboro controlled power transmission more closely. Then shuttle speeds were lowered to reduce warp-end breaks. The result on these looms was greater output per loom per day.

The belts, a combination of chrome-tanned leather and a polymer-plastic core, also eliminate slipping at loom starts and stops, at high ratios and at shorter center distances.

With the new drive setup, ratios are changed easily and there is always a soft, positive start.



## New Way Makes Transfers Simple

Slane Hosiery Mills, High Point, N. C., has beat the rap on hand transferring finished hosiery by designing and building its own automatic transfer machine.

Slane owns half interest in a machine shop next door to the mill, so in-plant research on this development was a natural.

About 60% of Slane's production is men's socks, and 40% is boys' socks. Each season 65 to 70 hosiery patterns are produced. As a result, transfer application is one of the most complex jobs at the mill.

Only one girl is needed to operate the machine, and transfers come from the machine head.

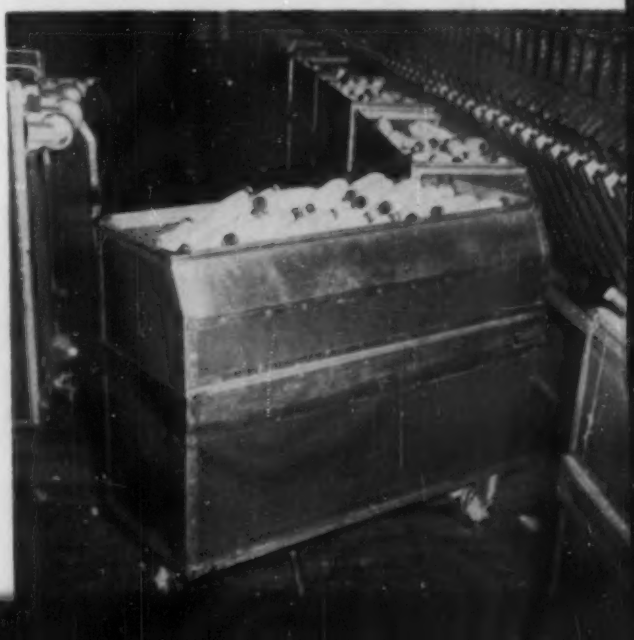
Imprinted socks are removed by a conveyor where they're packaged by girls on each side. Then they're shipped in boxes by customer specification.

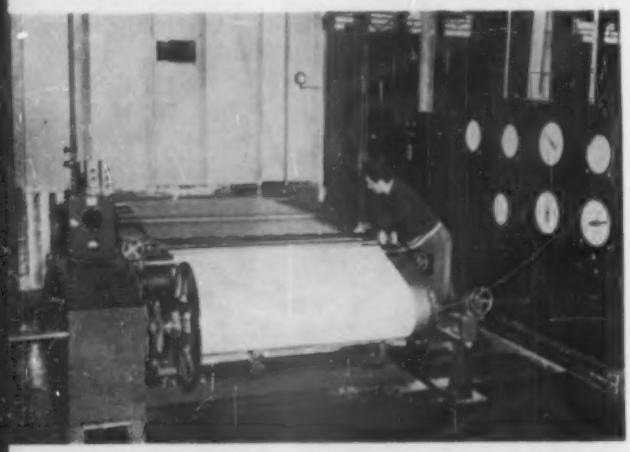
## Doff Box Saves $9,000 Per Year

Mary-Leila Cotton Mills, Inc., Greensboro, Ga., recently spent $2,000 on special warp-yarn doff boxes and is saving $8,000 to $9,000 per year on the investment—the cost of an extra yarn hauler for each shift.

The boxes (Fisher Mfg. Co., Inc.) accommodate a complete doff from Mary-Leila's new Whitin Standard frames, which have 2¼-in. rings and 276 spindles. Boxes are pushed into the spooler room where they are fitted snugly against the side of the spooler in place of the trough, which has been removed. A bumper on the spooler lines up the boxes in proper position.

Without these boxes, an extra bobbin hauler would have to be used on each shift to help dump the yarn into the spooler trough, because one man can handle only about half a doff of large-package warp spinning.



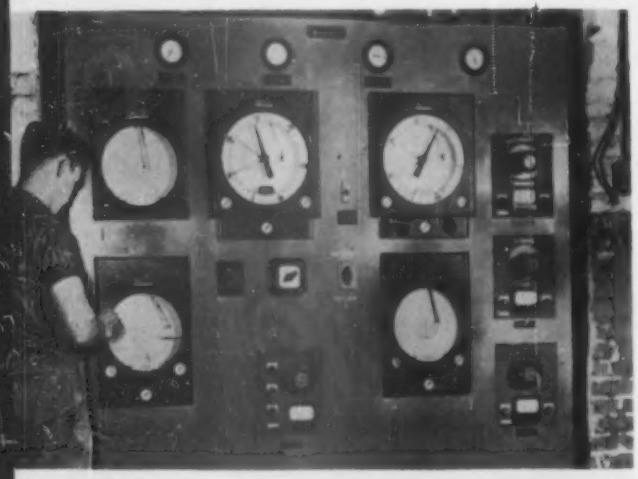


## Control Boosts Slasher Rate

Automatic controls for yarn stretch, slasher speed, and steam pressure in drying coils combine to give Canadian Celanese, Drummondville, Que., 25% better slasher production than was possible with manual control methods.

Keeping tabs on yarn input-output is an instrument actuated by tachometers at the entering and delivery ends of the slasher. Yarn stretch is indicated and recorded by the instrument. Slasher speed is dependent on moisture content of the yarn, and the Honeywell control for this phase can be set to produce yarn with just the right moisture.

To keep drying conditions constant so that the speed control can function properly, the steam to the drying coils is maintained at a constant pressure.

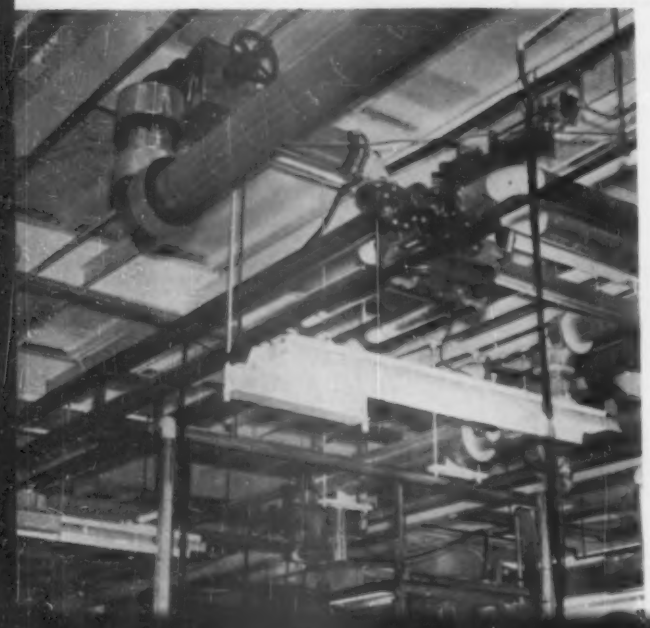


## Instruments Save Money, Boost Output

Russell Mfg. Co., Alexander City, Ala., relies on good instrumentation to eliminate guesswork, improve quality, and cut costs in its recently expanded bleaching range.

Key points that have been put under automatic control include J-box temperature control, wash-water temperature, and wash-water flow. The J-box is monitored by a recorder controller that keeps temperature at 212 F.

Russell has three rope washers to which hot water is metered at a preset temperature through a Honeywell mixing valve. The valve shuts off if the range is down for over five minutes, with savings of 1,250 gallons of expensive hot water per shutdown. This water is metered as needed by a Brown control unit—cutting hot water expense even further.



## Exchangers Cut Boiler Load 30%

The jacketed coils you see near the ceiling in the photo are one of a series of three heat-transfer units that cut the dyeing-room boiler load 30% in the new plant of P. H. Hanes Knitting Co. located in Winston-Salem, N. C.

Two units (made by Ludell Mfg. Co.) hang down from the ceiling.

The third unit (made by Witlock) is in the floor under the dyeing room.

Process water for dyeing must be 180 F. Used process water, still hot, passes through the exchanger and its heat is transferred to fresh water at 60 F. in the exchanger itself.

This way, new water is heated to 130 F. Then all the boilers have to do is raise the temperature of the new water 50 degrees—from 130 to 180 F.—and it is ready for dyeing again.

an entirely new line of V-Belt Drives.....

# DODGE Dyna V

**BIG-GROOVE TAPER-LOCK DRIVE**

*(— using standard A, B, C, D and E cross section belts, the hp ratings of which have been increased an average of 40% without any increase in cost)*

**DYNA-V TAPER-LOCK DRIVE**

*NEW* HIGH CAPACITY

*NEW* COMPACTNESS

*NEW* SAVINGS IN COST

**COMPARISON, ILLUSTRATED ABOVE — 3 HP, 1750 RPM, 2.41 TO 1 RATIO**

| | BELTS | | SHEAVES | | | CENTER DISTANCE | HP | WEIGHT (LBS.) | COST | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number | Size | O.D. Driver | O.D. Driven | Width | | | | Per hp | Per Drive |
| BIG-GROOVE TAPER-LOCK DRIVE | 3 | A42 | 4.15" | 8.95" | 2½" | 12.3" | 4.62 | 24.7 | $5.62 | $25.98 |
| DYNA-V TAPER-LOCK DRIVE | 2 | 3V400 | 3.35" | 8.00" | 1⅜" | 10.8" | 5.0 | 18.0 | $4.50 | $22.50 |
| % SAVING *Savings vary with different sized drives* | | | 19% | 10% | 56% | 12% | + | 27% | 19.9% | 13.4% |

Dyna-V Drives are sensationally compact. They are capable of handling up to three times as much horsepower in a given space. Dyna-V opens vast new possibilities for better, more economical machine design. And, in most instances, *Dyna-V costs less!*

Narrower grooves, to match stronger, narrower Dyna-V Belts, greatly reduce the face width and the weight of Dyna-V Sheaves. Cost is lowered. Smaller diameter sheaves and shorter center distances multiply savings.

Dyna-V Sheaves decrease shaft overhung—increase bearing life. The new dimensional stability of Dyna-V Belts solves the problem of belt matching. Every belt carries its full share of the load.

Dyna-V Drives are available for capacities from 1 to 1500 hp. Ask your Dodge Distributor. Or write us for new Dyna-V Bulletin.

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ACRYLIC FIBER

THE NEWEST OF THE ACRYLICS

What's New This Month in . . .

# Fibers, Yarns, and Fabrics

By CAROL WILHELM, Copy Editor, TEXTILE WORLD

## Color Line Grows

Chemstrand Corp. has expanded the color line of its Acrilan-Spectran fiber, its solution-dyed acrylic.

The company has developed six new colors specifically for high-pile fabrics for the coating and coat-lining markets. Blending the colors themselves or blending with white can create an additional range of color—a range including grayed tones and subdued pastels.

In selecting and developing this new color range for Acrilan-Spectran yarns, Chemstrand has worked with weavers and knitters of pile fabrics. Companies now producing pile fabrics of Acrilan-Spectran are Glenoit Mills, Inc., Princeton Mills, Borg Fabrics, and Sidney Blumenthal & Co.

## Saves Wives Time

Pepperell Mfg. Co. is making the task of identifying sheet sizes easier for the homemaker.

The company now weaves a colored stripe into the selvage. Thus the homemaker does not need to unfold the sheet completely to see what size it is.

A single stripe marks twin sizes. Double sizes have two stripes. Three stripes mark the queen size, and four mark the king size.

## Two New Names

Du Pont has developed a new fibrous form of man-made polymeric material. The company has coined a name—fibrid—for the material and has given the word to the public as a generic term.

These fibrous particles may be used in nonwoven fabrics and are processed by a new method. The nonwoven structures manufactured this way will fall under another generic term—textryl. Textryls may be made on conventional papermaking machinery, although modifications may be required, depending on the type of equipment in use.

Du Pont will produce and sell fibrids in experimental quantities. The new structures may be produced in a variety of weights and textures. They may be printed, dyed, and embossed.

## Needs Less Work

Eastman Chemical Products, Inc., has developed a new blue-white solution-dyed acetate yarn. It's called Diamond-White Chromspun 332. The new yarn is said to eliminate extra processing formerly needed to obtain this whiteness.

Diamond-White Chromspun 332 is offered in 100, 150, and 300 deniers. Slated end uses: bridal wear, foundations, and other women's apparel.

## More Fur-Like

A deep-pile coat with a "let-out" look is scoring high in fashion and sales throughout the country. The fabric is called Alatia.

The fabric closely resembles the high-low shading and feeling of natural fur pelts. A coat of this fabric, as introduced in a fall collection of Lou Nierenberg, retails from $135 to $160.

How is this new effect achieved? By a special electronic process. The process was developed by Lou Nierenberg in cooperation with Alamac Knitting Mills. Alamac makes the two-height pile fabric of Dynel and Verel.

First colors in Alatia include black-on-black, white-on-white, dark brown or "ranch," fawn, and autumn haze. Deep purple is the latest color. All coats of Alatia are in the popular vertical pelt-striping. Several have horizontal striping.

For spring 1961, Lou Nierenberg will show a full line of stoles and short pieces. They are expected to retail from about $59 to $79.

## One More Gabardine

Dan River is now offering its second gabardine. This new fabric, called Gabradan, is made of combed cotton. Its other gabardine is of carded cotton.

Weight of the new fabric (in the gray) is 1.72 yard per pound. It is offered in 25 colors—from pale pastels to the deeper tones. Base price is 78½¢ for pastels. Deeper tones are slightly higher.

## Coming Soon

Come January, Rayntyte will make its debut. What is it? It's a water-resistant fabric of Dynel. It will be used for boat covers. Manart Textile Co. makes it.

The new fabric is a decided improvement over conventional canvas in several respects: It has longer life, it's mildewproof and wrinkleproof, will not shrink or stretch, and will not support combustion. It takes sunlight without fading.

The finish does not clog the weave of the fabric. Air can pass through the fabric freely. None of that clammy feeling sometimes associated with other water-repellent fabrics.

## New Rayon—New Use

American Viscose Corp. has announced a new rayon fiber, RD-101. The new fiber makes possible the manufacture of "paper" from 100% man-made fibers without the need of working the fiber and without adding pulps or agents other than water to form a slurry.

*. . . Turn the page*

The new product is a short, multicell fiber. When the fibers are formed into a wet-laid web and dried, they firmly bond themselves together and lock into place other fibers.

Among possible end uses for RD-101 are backing for vinyl coats, carbon and mimeograph papers.

## 3 More Added

Dobeckmun Co. is now offering three new patterns in Metalflake for decorative use.

The new patterns are in diamond, comet, and microflake shapes.

The metallic chips are adaptable to a wide variety of applications ranging from floor and wall coverings to upholstery, apparel, and paper products. They can also be incorporated into paints.

## And It's Treated

It's wind-, weather-, and wear-resistant. It's Jak-Duk, a closely woven plied-cotton duck offered by the Apparel Fabrics Div. of Wellington Sears Co. It was shown at the National Outerwear & Sportswear Show last month.

The Zelan-treated Jak-Duk is available in 45-in. widths. Weight is 10.38 ounces. Wholesale price for colors is 67½¢ per yard; for white, 64½¢ per yard. The fabric is offered in seven colors, black, and white.

## Luster Lasts

Borg Fabric Div. of Amphenol-Borg Electronics Corp. showed a new series of deep-pile fabrics at the National Outerwear & Sportswear Show last month.

The pile is 100% Creslan. The backing is knitted of 50% Arnel and 50% acetate on specially developed knitting machines. The pile fabrics are available in a range of pile heights and colors. Various levels of luster are offered.

The fabrics will retain their color and luster whether dry cleaned or washed. They're available in widths up to 60 inches.

## On the Inside

Lantuck Div., Wellington Sears Co., is manufacturing a chemically bonded front felt material that is being adapted by the Palm Beach Co. as interlining for its wash-and-wear and regular garments.

The new material is available in natural white. It comes in 40½-in. widths and in 100-yd. rolls. The company has developed three styles.

The binder is a specially formulated latex. It gives a soft felt-like hand to the fabric. It is used in the coat-front assembly and in sleeve heads of the garments.

## Mellowed and Muted

What's new at James Lees & Co? It's Winding Way—a new all-wool carpet.

It's made of heavy cable-type saxony yarn. The selected wools have been scoured according to type and then blended. This type of blending insures a constant, accurate blend proportion. A crackleware texture with embossed nubby loops creates the over-all effect of a cross-tone design.

The colors are mellowed and muted. They are Terra Cotta (medium and light copper), Bleached Straw (beige and white), Pine Green (medium and light cool green), Pebble Beige (medium cool brown and light amethyst beige), Frost Cocoa (medium brown and light pinkish beige), and Maple Sugar (soft tan and off-white).

The carpet is woven in broadloom widths of 12 and 15 feet and retails at $10.95.

## For Custom Orders

Carpets, Inc., introduced last month its made-to-order lines of hand-hooked and tufted all-wool carpets at an exhibition at the National Design Center in New York.

Ten tufted qualities were introduced in the Master Editions line—in a broad texture range. Fourteen hand-hooked qualities with advanced decorator patterns were introduced in the Hook Craft Originals line. Retail prices range from $16.95 to $54.95 per square yard.

All the rugs are made in seamless widths up to 32 feet, in special shapes, and with hand-knotted fringes. Mothproof, 3-ply wool yarns are used. The company skein-dyes yarns to a customer's order.

## Pack With Ease

Herculite Protective Fabrics has developed a new suspension system for packing hard-to-pack objects. The method is patented.

The new system employs a simple interlacing, which suspends the object in a web of fabric strips. The strips are made of a vinyl-and-nylon fabric called Herculite 80, a fabric that has high tensile strength and tear strength.

Civilian and military operations have conducted complete studies of the shock-isolation values of the system. The studies show that the system offers a good degree of cushioning, spreads the impact load more efficiently than traditional methods and materials, requires less space for the same or greater protection, and protects the object from outside contamination.

## They're Weaving . . .

. . . two new pile fabrics at Collins & Aikman—called Sherpa and Sherpa-Touche. They can compete favorably in price with knitted pile fabrics.

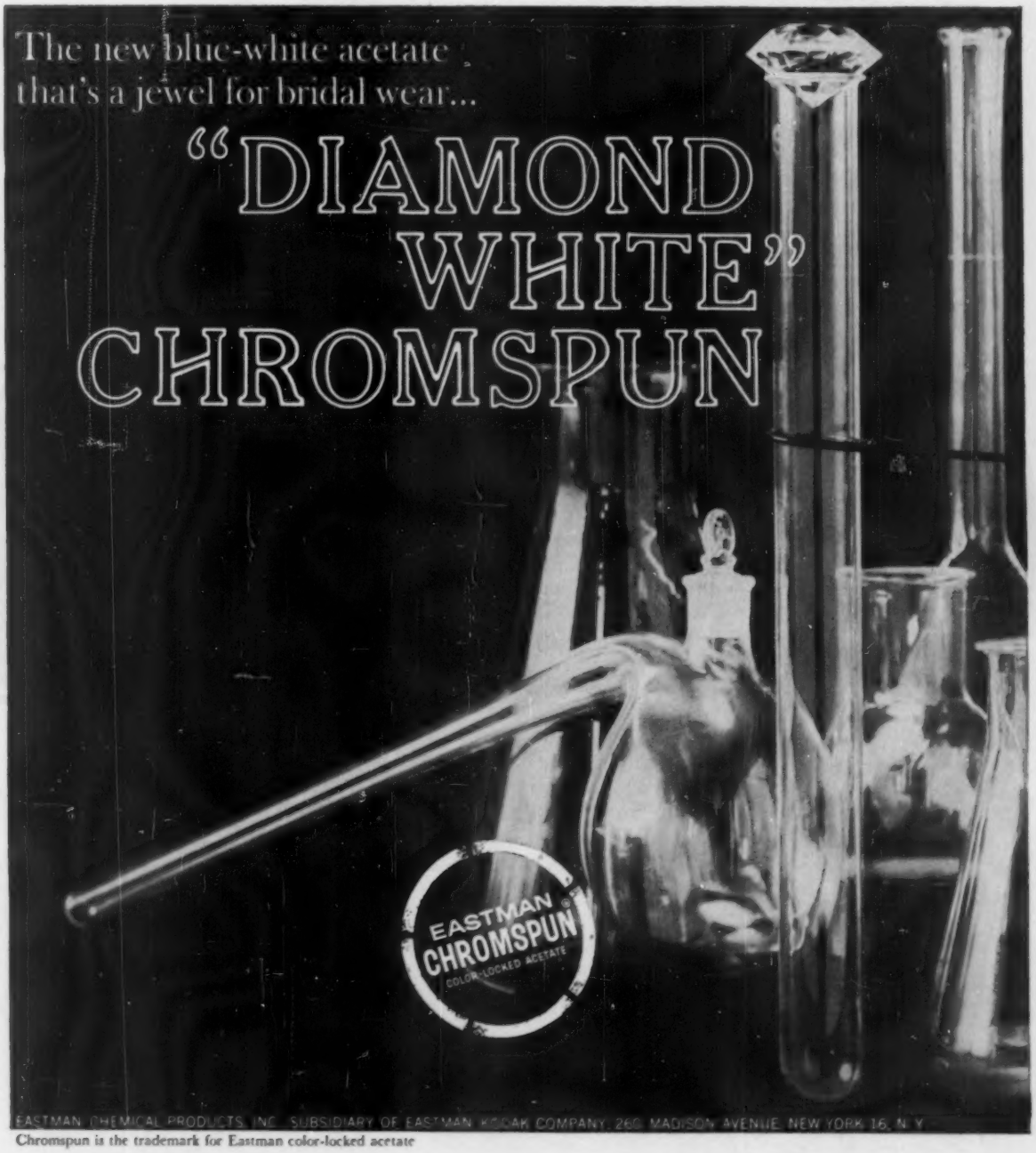
Both fabrics have 100% Creslan pile. The backing on each is 100% cotton. Both have good dimensional stability.

Sherpa has a shearling texture. The styling of this fabric creates a uniform as opposed to a directional texture. It is offered in a wide range of fashion colors—from cream-puff white to a deep black. It may be used as a pile liner or for outerwear. When used as a liner in a washable garment, it can even be washed.

Sherpa-Touche is a solid, dense pile. It has a rather clear face with a subtle nubby look. It may be used as a liner or for a shell.

It's blue-white, it's beautiful and it's engaged to some of the most exciting new bridal fabrics in town. It will also have a happy future in swimwear, knits, foundation garments and other feminine fashions. Once again, Eastman fills a long-felt need...with the first blue-white solution-dyed acetate available anywhere.

ANOTHER EASTMAN FIRST!


The new blue-white acetate that's a jewel for bridal wear...
"DIAMOND WHITE" CHROMSPUN
EASTMAN CHROMSPUN
COLOR-LOCKED ACETATE
EASTMAN CHEMICAL PRODUCTS, INC., SUBSIDIARY OF EASTMAN KODAK COMPANY, 260 MADISON AVENUE, NEW YORK 16, N.Y.

Chromspun is the trademark for Eastman color-locked acetate

CHAIN

**CHANGE!** It's the pattern, the pulse of the textile industry. It produces new, different, salable, successful ideas and products ... improves service, styling, ease of care for consumers ... improves profit opportunities for you.

By originating new and improved fiber products and processes, each designed for a specific area of the textile business, we serve our customers, build their business and our own. To carry on this work, the Du Pont Textile Fibers Department operates seven separate research and development establishments. At any one time, as many as 50 fiber or process improvements may be under evaluation.

Here's a rundown of the new products and processes we have offered the industry in the past year. Look through them for the ones that affect **your** business. You can look to Du Pont to keep providing many more profit-making ideas.

"DACRON"* POLYESTER FIBER: **Rotoset yarn** – Special filament yarn. Improves mill processability, permits reduction in twist levels. **Type 64 color-sealed black**–Designed for suitings–black staple and tow with broad style possibilities. **Type 62**–Filament yarn with improved hand and dyeability. Makes possible new styles and prints for apparel. **Type 35**–Improved fiber for cellulosic blends permitting broader range of fabric type. **TRL-12**–New aqueous system for improved adhesion to rubber and neoprene.

"ORLON"* ACRYLIC FIBER: **Type 72** – Staple for blending with cotton. Extra-comfortable, with durable whiteness and brightness for skin-contact apparel. **Fiber Sealed**–Fiber Sealed jersey knits with shape locked in–firmness jersey has never known – resists crushing, sagging – springs back to beauty. Fiber Sealed blankets with resistance to matting and shedding.

"ORLON SAYELLE"* ACRYLIC FIBER: **Type 24**–For full-fashioned sweaters and fine-gauge jersey knits–supplementing bulky sweaters of "Orlon Sayelle" Type 21.

DU PONT NYLON: **"Antron"* nylon**–New trilobal multifilament yarn with luxurious hand, rich lustre, durability. For apparel. **"Antron" 24 nylon**–Rich upholstery nylon. New beauty, styling, texture, soft highlights. **Type 288 nylon**–Improved texturing performance, bulk, dye uniformity. For the texturing industry. **Type 91 nylon**–Whiter nylon with superior texturing performance for circular knit foundations. **Tricot satinette**–Outstanding aesthetics, appearance and hand for luxurious lingerie. **"Taslan"* textured nylon yarn** used by manufacturers to produce extra-strong, eminently sewable thread for wash-and-wear and home sewing.

"ACELE"* ACETATE: **Cycloset**–Yarn development for tricot knitters. Superior running performance. For deniers from 40 through 100, either on tubes for warping or tricot beams.

DU PONT RAYON: **"Super Cordura"* Type 272-T**–New type of thread for bag closures. Lower cost, high performance, strength, holding power. No operational adjustments. For burlap, textile or multi-wall bags.

"LYCRA"* SPANDEX FIBER: The only multifilament spandex fiber. Makes possible uniquely lightweight elastic apparel–foundation garments, swim wear, sock tops, surgical hosiery, etc.

BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

DU PONT

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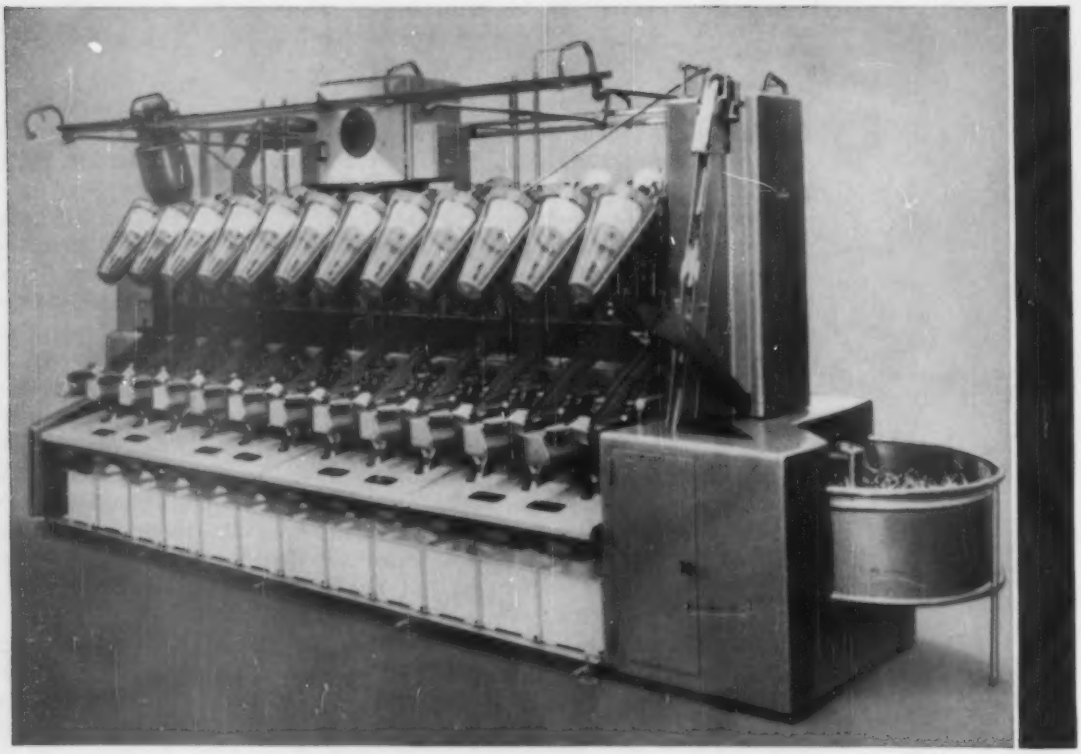
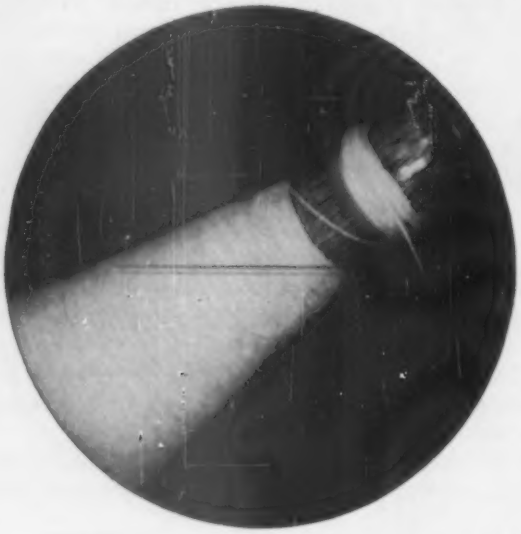
*DU PONT'S TRADEMARKS

Enjoy "The Du Pont Show With June Allyson", Thursday nights on CBS-TV.



**SCHWEITER Automatic Filling Winder with the new parallel bobbin arrangement for the filling of all types of loom batteries**



Our latest model Automatic Filling Winder, type MSL:

- with Dust Exhaust system
- with Parallel Bobbin arrangement– regular, or double size, boxes can be used
- equipped with ROTOR – for building Tailless Bobbins
- with, or without, Interlocking Tip Bunch for Automatic Loom Box loading

**SCHWEITER LTD.**
HORGEN (Zurich) Switzerland

*Exclusive agents for U.S.A. and Canada*
**H. J. THEILER CORPORATION**, *Whitinsville, Mass.*

# How to Use Mistakes

*As long as there are humans running the mill, there will be mistakes. But that isn't all bad. Fact is, each mistake presents a new learning opportunity, a new chance to improve your management teamwork.*

AVOIDING MISTAKES isn't always possible. Even if you take great pains to avoid making errors yourself, chances are your associates or subordinates will make their share of mistakes, no matter what.

Same is true of your superiors. Even they aren't immune to the mistake virus. That's why even if you aren't directly responsible for a mistake yourself, you're involved in those made by the people you work with—your subordinates, equals, or boss. But that doesn't mean mistakes need to have a disastrous effect on your job climate. On the contrary, mistakes can often be turned into assets.

Look at one case. Four overseers in a North Carolina cotton mill were meeting over lunch to discuss a mutual problem one day not too long ago. Their boss, the mill superintendent, had been urging an expensive foreign-made loom, and eventually the company gave him the go-ahead to buy the loom.

But the loom just didn't work out as expected. It turned out bad cloth with too many defects. All attempts to control quality with any consistency turned sour. The boss was in trouble with the mill owners and top mill managers, and he knew it. Pay-out time for the new loom kept moving farther and farther away. Profit was being eaten up by the contrary new loom. The boss, being human, turned a bit surly. He began taking out his ill feelings on his subordinates.

The loom couldn't go back to the manufacturer because of import problems. The company was stuck with the loom, the superintendent was stuck with his bad judgment, and the overseers were stuck with their bad-tempered superior.

By S. G. WILLIAMS
Management Consultant
New York City

## TAKING STOCK OF MISTAKES

After days of grumbling and sagging morale among them, the overseers decided to take a more positive look at the problem they faced because of someone else's mistake. "You know," said one, "we've been wasting a lot of time and energy taking the boss apart because of that loom and the way he's been biting at us. Maybe there's another way to look at this."

That was the beginning of the solution to the problems caused by their boss's mistake. They began to take a creatively critical view of the problem instead of the unconstructive view they had been taking.

They decided to give the boss credit for having good motives for buying the loom. Maybe, they reasoned, he had good reasons for sticking his neck out on such a big purchase. Maybe, they thought, they could help neutralize the effects of the mistake their boss had made by learning everything they could about the offending imported loom.

So the overseers got together one Friday night after work and stripped the loom down completely. They went over each component and control with a keen eye for detail. That's when they began finding little things that suggested a way out of their boss's dilemma. For example, they found several adjustments they didn't even know were on the loom. They plodded ahead, piecing together a new understanding of how the loom was supposed to work, and what peculiar advantages it might possess. Next thing they knew, they had tinkered with the new adjustments in such a way that the loom began to operate perfectly.

"Right now we're trying to rig those adjustments into our old looms. And the boss is happy enough to hand out bonuses."

## FINDING THE PROBLEM

There were two mistakes in the case above. The first was the superintendent's error in judgment—he bought a loom about which he didn't know enough, and didn't take the trouble to find out the whole story on it before installation. The second error was the overseers' assumption that the loom was no good. Both the error of the boss and of his subordinates resulted from a lack of sufficient knowledge about the machine. This points up the fact that all mistakes stem from some definite problem. That's why they are an excellent sign that there's a distinct area of trouble somewhere.

That's why you'll be able to isolate the source of the mistake if, once a mistake is made, you ask yourself, "What problem caused this error?"

You may well find a condition that is causing other employees trouble, only now you've caught it before this trouble-generating problem creates a catastrophe rather than just a mistake. Some common trouble spots:

- Poor department layout
- Safety hazards
- Dull or low-quality tools
- Personal problems
- Mistakes in blueprints
- Inadequate communications
- Conflicting lines of authority

. . . *Turn the page*

Mistakes are often caused by bad communications. But communication failures are hard to spot. Often you can't put your finger on a mistake-generator until something has gone radically wrong. Your subordinates' mistakes give you a clearer evaluation of such vital matters as these:

. . . Does the pattern of mistakes indicate that you haven't instilled a real understanding of company policy, work regulations, or over-all department objectives?

. . . Has each subordinate's work been explained to him so that he's clear on his job function, firm in his understanding of the extent of his responsibility?

. . . Does each of your subordinates know your objectives, the plans you have for reaching these objectives, the controls you've set up to keep the plans on the track?

. . . Do your men know where to go and which man to see for the things they need? Is each of the men clear on just who is responsible for each function in the mill?

. . . Do you keep your men up to date on any changes that may affect them? Do you keep them informed well in advance of any change?

Because your responsibilities include the work performance of your subordinates, you're directly concerned everytime one of them makes a mistake. Any time you can correct a situation that can produce a mistake, it's a feather in your cap.

## TRAINING ON THE SPOT

Right after a mistake is committed—that's the best time to learn how to avoid a repetition. That's the best time for the man who committed the error and you to analyze the implications of his mis-cue. What are the effects of the mistakes? Who else is affected? What is the probable cost in terms of quality, or delivery time, or production control? What about the specific difficulty? Does it betray a lack of understanding of a basic skill, such as working with electric cable? For instance, two or three accidents with electricity suggest that several seminars on the basics of handling electrical equipment are called for.

The same kind of analysis applies to all work situations. Maybe what you need is to get your group together with the accounting people or the purchasing agent, so there will be better understanding of procedures, a clearer knowledge of how each job your department does fits into the over-all mill picture.

Here's an exchange overheard in an Alabama mill:

"If I could just get these guys to realize how much it costs every time we ruin one piece of cloth!"

"Do they know the raw material price and how much it's worth in dollars and cents by the time it's been finished?"

"How could they? I don't know those answers myself."

Fortunately, this supervisor heard his own words and was dumbfounded at the implications. He found out the costs immediately for himself, and arranged a meeting so his people could be told not only these but many other pertinent figures.

## WORKING WITH THE TEAM

Whether or not it is stressed at your mill, you constitute a team with the other supervisors. When one member of the team falters, it affects the whole group. So you can strengthen your team each time you make good use of a teammate's mistake.

The error may point up an interdepartmental problem area, such as materials flow. It may put the finger on communications gaps between your section and another. It can create an awareness of an information or training program from which all the supervisors could benefit.

Helping a colleague correct or compensate for a mistake he's made is probably the best opportunity you can have to develop better work relationships. You'll need an open, constructive attitude—an attitude that identifies you as a man interested in solving problems, not in advancing yourself by tearing down your colleagues. Cooperation, then, is the keyword in spotting and correcting mistakes. It's the cooperative outlook that can help ease the tension left by previous differences and disputes.

Just make sure you offer help tactfully. It takes a fine sense of human relations to work out a solution with a man who has recently made a mistake. Kidding or sarcasm will probably defeat your purpose, create an enemy, when it's allies that you really need.

When the time comes for one of you to be promoted, whom will the group most happily accept as their new boss? The one who has had the knowledge, the understanding, and the inclination to help others when they were in trouble. The manager who has a sense of human relations.

And don't overlook the other side of the coin. It's just as important not to take personal gain from another supervisor's errors. It's unfortunate but true that ambition can sometimes prompt us to climb the next rung of the ladder by using another man's back.

## WORKING WITH THE BOSS

The four overseers at the beginning of this story corrected their superior's mistake in self defense. But even though your boss doesn't take out his disappointments on you, there are profitable ways to use his mistakes.

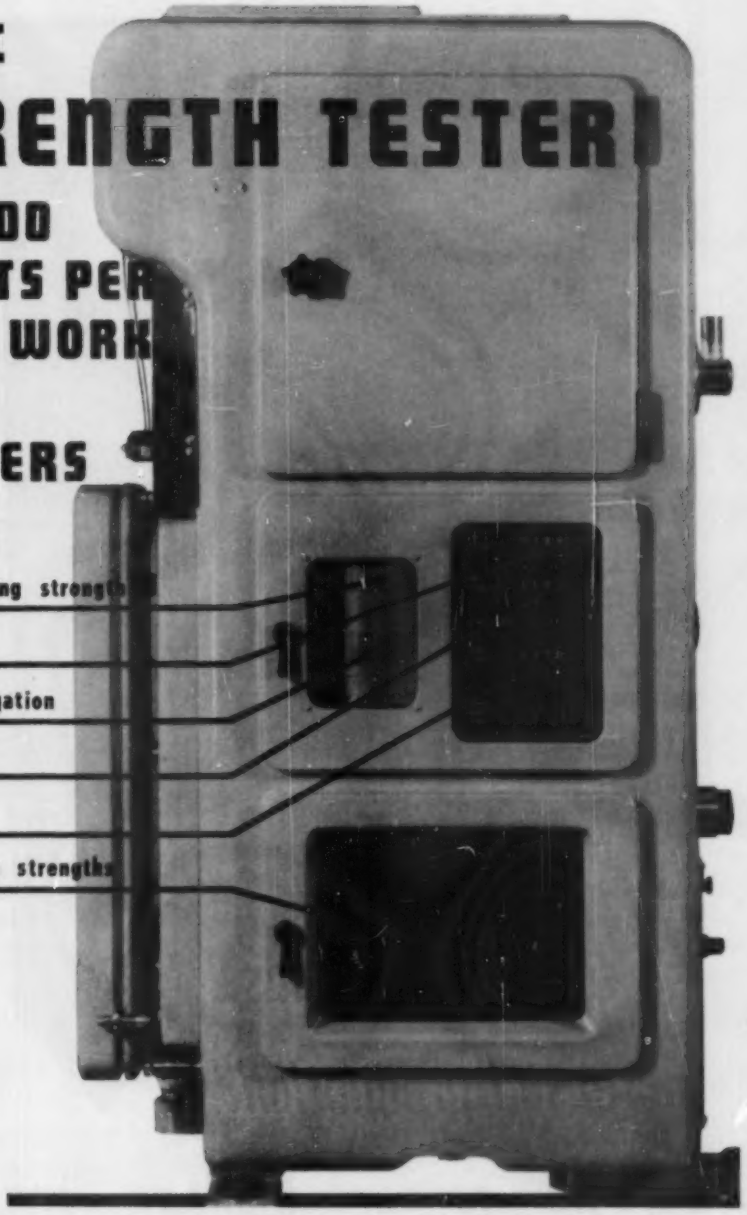
Every time your boss slips up, you can increase your value to him by using your strengths to balance his weaknesses. Helping the man on the next higher level when he makes a mistake is an ideal way for you to learn more about his job and prepare yourself for career growth.

But it can hardly be overemphasized that this kind of mission is an extremely delicate job. You have to guard against over-zealousness that might lead your superior to suspect that you have immediate and threatening designs on his job. If you should instill this kind of fear in him, you'll find your own position just that much more uncomfortable and unrewarding. You'll find your chances to make real contributions will be severely limited.

That's why your own sense of personal diplomacy is about the most important sense you have when it comes to the delicate matter of helping your boss without making it appear that you're after his job (or otherwise trying to undermine his security). Breathing down the boss's neck with offers of assistance can make you mighty unpopular, both with him and with your colleagues in the mill.

# THE AUTOMATIC
# USTER STRENGTH TESTER

## MAKES OVER 1000 SINGLE END TESTS PER DAY — DOES THE WORK OF THREE HAND OPERATED TESTERS



*Measures and registers the following:*

- Individual indication of the breaking strength
- Sum of the elongation
- Individual indications of the elongation
- Sum of the breaking strengths
- Number of tests
- Frequency distribution of breaking strengths

The Strength Tester indicates, along with individual yarn strength, the elongation variability which is proving to be more and more important as an indication of processing efficiency. That, together with the frequency distribution of the break, make up indications which will allow the mill superintendent to accurately forecast processing efficiency. These indications are AUTOMATICALLY registered on this machine.

The Uster Strength Tester operates using the inclined plane principal with a constant rate of loading. The automatic features of this machine entirely eliminate the possibility of operator error. The work required is confined to simply loading, putting the apparatus in operation, and reading the measured results from the recording indicators. Data indicated is quickly and accurately transformed into statistical results.

USTER

*For more information on the Uster Strength Tester contact:*

**USTER CORPORATION, CHARLOTTE 8, N. C.**

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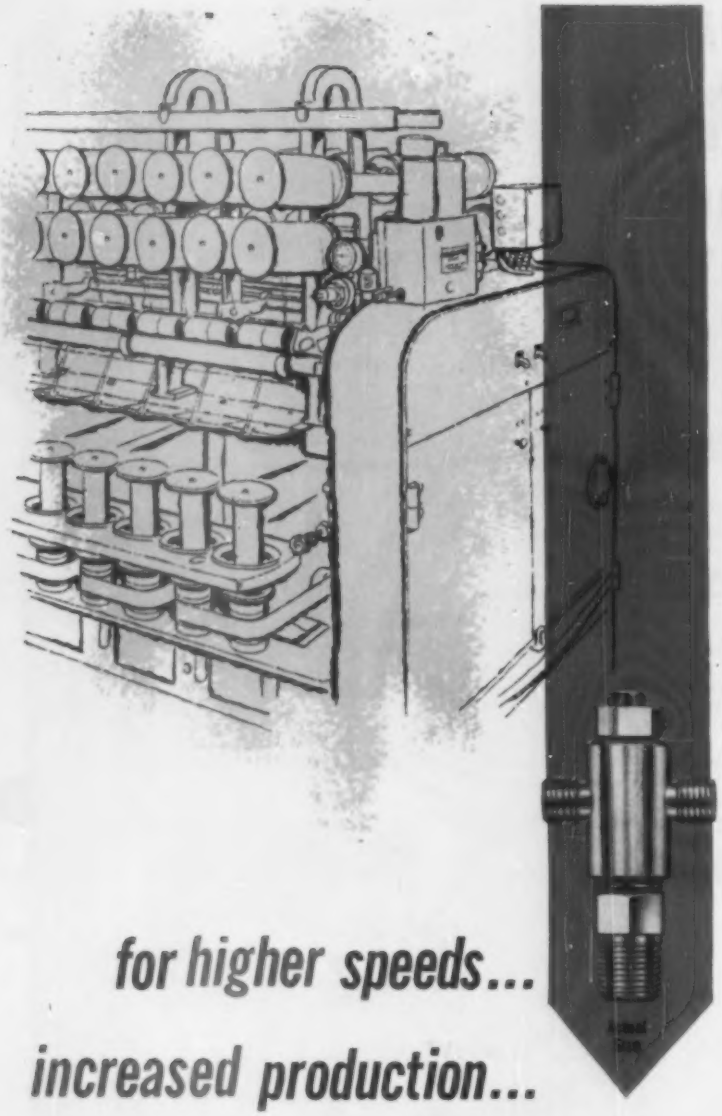
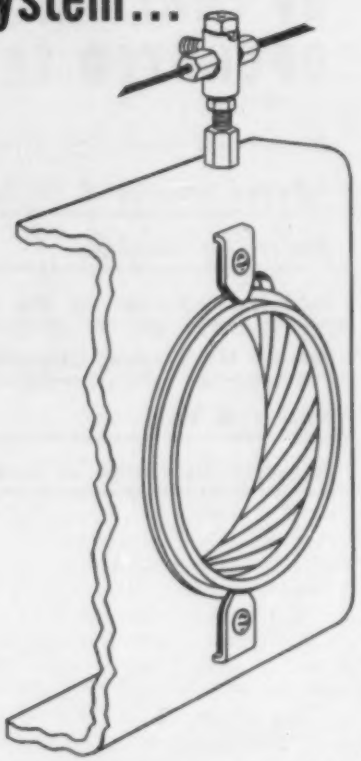
CIRCLE 125 ON READER SERVICE CARD 125



# New Adjustable Accumite® Ring Lubrication System...



## for higher speeds... increased production... less product spoilage...reduced power costs!

When you order new spinning or twister frames (or just new rings), specify Alemite's new adjustable Accumite System for increased production and lower costs. This accurate, economical, low-pressure lubrication system assures automatic ring lubrication while the machine is in operation. Adjustable measuring valves meter exact amounts of refinery-clean lubricant to every ring on the frame rail.

Because an Accumite System maintains a constant, proper lubricant film, it assures even tension and uniformity of thread. It virtually eliminates product spoilage due to over lubrication – eliminates drip and spray. The Accumite System reduces lubricant consumption and prolongs ring life at higher operating speeds.

***Send for all the facts on the Alemite Accumite System – important production tool of the textile industry!***

Symbol of SW Excellence

**ALEMITE** DIVISION
**STEWART-WARNER** CORPORATION

Dept. X120, 1850 Diversey Parkway, Chicago 14, Illinois

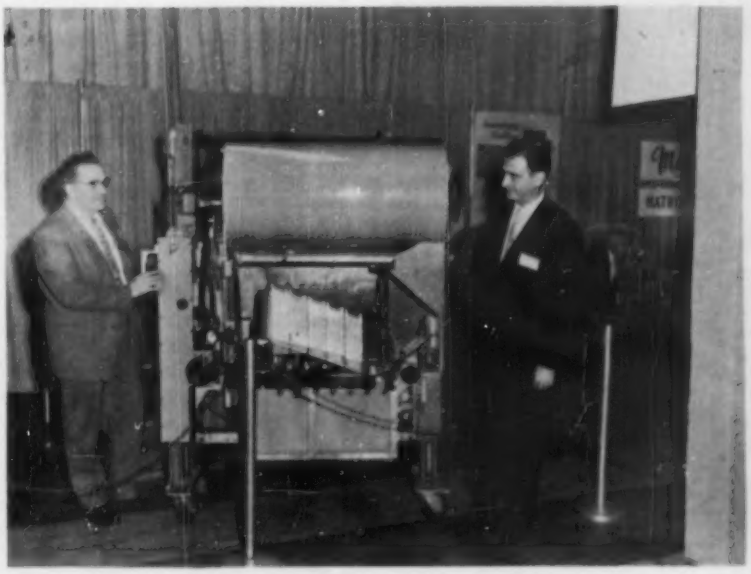
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

# Two Deliveries —750 Fpm.

The Feathertouch drawing frame has only two deliveries and runs at 750 fpm. Manufactured by Ideal Industries, Inc., the frame handles all staple lengths from ⅞ to 3 inches—cotton, man-made, blends, and wool. The coilers are equipped with 18 x 42-in. cans. Tube gears and drive gears have heavy-duty ball bearings. The can table is equipped with permanently sealed ball bearings.

Each drawing frame comes with a cleaning system that runs from a 1½-hp. motor. This system removes trash and nonspinnable fiber and also acts as a roll coolant for the high-speed operations. The drawing frame is run by a 1½-hp. motor, driven by an electro-magnetic clutch. This permits slow starts but quick speed build-up. The unit is operated by pushbutton control. It has electric stop motions for trumpet, predetermined yardage counter, top roll, and spoon knock-offs. Each stop is indicated by a separate color signal light. (Circle E-1 on Reader-Service Card)

# Doffs 6,000 to 8,000 Bobbins an Hour



Automatic doffer called Treufus (Willcox & Gibbs—see TEXTILE WORLD, Aug., p. 124), will doff 18,000 bobbins per hour but working rate is 6,000 to 8,000 bobbins an hour. This rate takes into consideration the auxiliary operations required by the operator such as handling the empty and full bobbins. The doffer is mechanically actuated and manually operated. It has no electrical connections. The running speed of the machine is 80 fpm. and yarn breakage is said to be virtually zero. The unit is 21 inches wide, 56 inches long and adjusts from 63 to 72 inches high. The doffer is mounted on four rubber-tired full-swivel wheels and is easy to move through narrow aisles. (Circle E-2 on Reader-Service Card)

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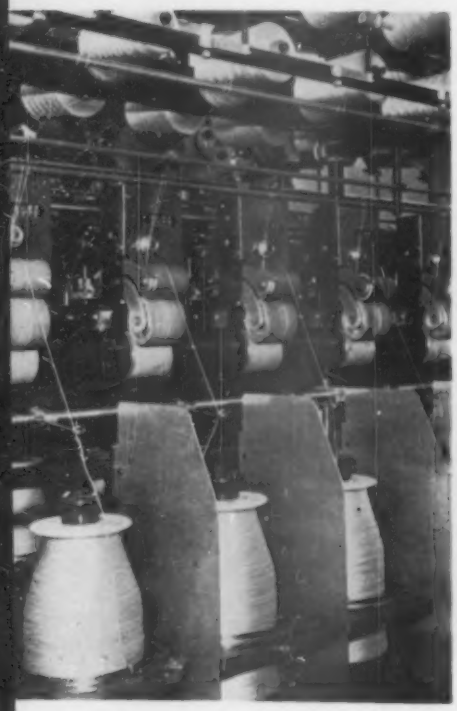


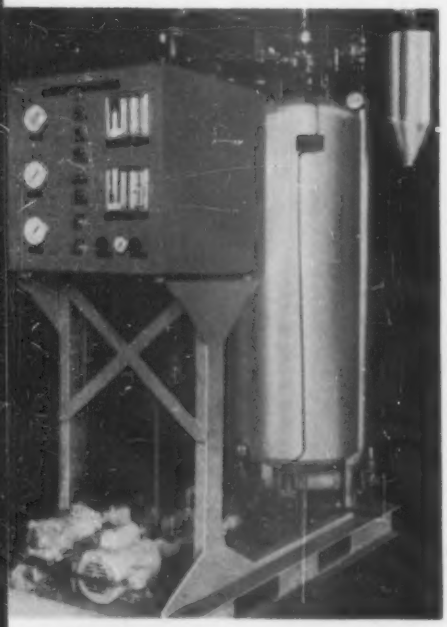
## 12-In. Package —Six Pounds of Yarn

The LP Doubler Twister, designed by Utex, Inc. (Div. of U. S. Textile Machine Co.), uses a lifter rail with a 12-in. traverse. The ring diameter is 7 inches, which takes bobbins with up to 6¼-in. diameter flanges. The 6¼ x 12-in. bobbin holds up to 6 pounds of man-made filament yarn or 12 pounds of glass filament yarn.

The twister is equipped with electrical stop motion that can handle four ends in doubling from an overhead creel. The feed is a single-wrap, three-roll combination without gearing. A chain-and-sprocket system is used for twist changes. With a change in either one or two sprockets the twist can be varied, in small increments, from 1 to 15 tpi. The company designed this twister using fewer working parts. Result: easier, swifter maintenance. (Circle E-3 on Reader-Service Card)

**E-5—Card drive** has features of individual card drives without disadvantages of jack shafts, clutches, and gear reducers. The manual motor starter has start-stop buttons and a reversing drum switch to facilitate card grinding. The unit is easily mounted in existing bolt holes in the card frame. The totally enclosed, nonventilated, 1½-hp. motor operates at 1,200 rpm. Gunter & Cooke, Inc. (Circle E-5 on Reader-Service Card)

## High-Temperature Starch Converter



The corn-starch converter developed by A. E. Staley Mfg. Co. goes one step further than the continuous jet-cookers that have been developed in recent years. This unit not only cooks starch slurries but holds the pasted starch in a pressure vessel for conversion into a modified form of the original starch.

The operation is continuous. All variables—slurry pressure and flow, steam pressure, conversion temperature, and holding time—are automatically controlled for uniform and reproducible results.

The system is designed for uninterrupted production, covers all steps from bag starch entering the mill to the size boxes.

Starch converted by this method has the desired fluidity, film-forming, and noncongealing properties essential to efficient warp sizing. (Circle E-4 on Reader-Service Card)

## Slub Catcher —Transistorized

The Spectomatic, by Uster Corp., automatically compensates for size variations in yarn. It assures the mill of elimination of all defects that should be eliminated. At the same time (by electronic discrimination) it allows certain defects to pass when the repair knot would be more serious than the defect. The unit removes up to 95% of all slubs in winding. The slub catcher uses low voltage and is unaffected by power variations. Because it is equipped with transistors, there's no warm-up period. Vibration does not affect the unit. It can be mounted directly on the winder arm. Two types are available—one for long-staple fibers and one for cotton fiber. (Circle E-6 on Reader-Service Card)

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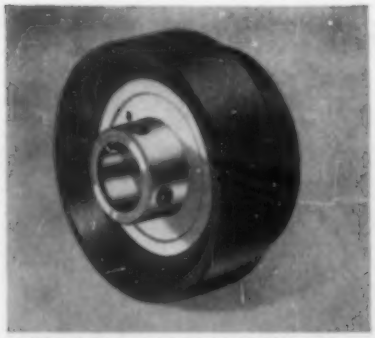

Idler shell on driving roll which contacts the small end of cone on the Model 102. If this shell sticks on the bearing, it will cause hard nosed cones and burned yarns. Therefore, it requires the best in materials and workmanship.

Close delivery thread guide and dog for Foster Model 102. These parts are made from steel forgings which require very accurate and expensive dies. The finish on these parts also plays an important part in their performance.

Profilometer (which measures irregularities in millionths of an inch) used by Foster to test the inside surface of a tube which is part of the Model 102 for processing Textralized* yarn (*trademark of Joseph Bancroft & Sons).

Micro-Projector, an optical testing instrument used by Foster to magnify the silhouette of an object 62½ times and thereby reveal imperfections invisible to the naked eye.

*How to Get*

# FULL VALUE

*From Your*

## FOSTER WINDING EQUIPMENT

We don't have to tell you that in order to get full value from your Foster winding equipment, it must be properly maintained and repaired. The question is, how can you be assured of proper maintenance and repairing?

As to repairs, the first step is to use genuine Foster Repair Parts. Many Foster parts are made of special materials and have special finishes which cannot be duplicated with cheap substitutes. Furthermore, many Foster Parts are scientifically tested, before assembly, with high-priced testing equipment, which is not available in the ordinary machine shop. The illustrations herewith give a few examples of what we refer to.

Second, use *Preventive Maintenance*. By so doing you gain in 5 ways: — 1. Increased winding efficiency. 2. Less wear on and longer life of parts. 3. Better winding. 4. Improved customer relations (if you're a sales yarn mill). 5. Reduction in costly breakdowns. Without preventive maintenance, the same 5 gains turn into losses.

The best way to utilize preventive maintenance is to have a Foster Service Man make periodic inspections of all your Foster Winding Equipment, in conjunction with your Maintenance Supervisor. This Foster Service Man will give you a written report on the condition of your Foster equipment, will suggest improvements in maintenance practice, if necessary, and will recommend replacement of parts when advisable. There is no charge for this service *if* our representative is permitted to fit his visit to your mill into his planned call schedule.

If you would like to know more about getting full value from your Foster Winding Equipment, write for our three booklets: — "Preventive Maintenance", "Why Genuine Foster Parts" and "Emergencies are Costly". No obligations.

A Member of American Textile Machinery Association

## FOSTER MACHINE COMPANY

*A Yarn Winder for Every Purpose*

Westfield, Massachusetts, U.S.A.

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277-O

# Equipment and Supply News

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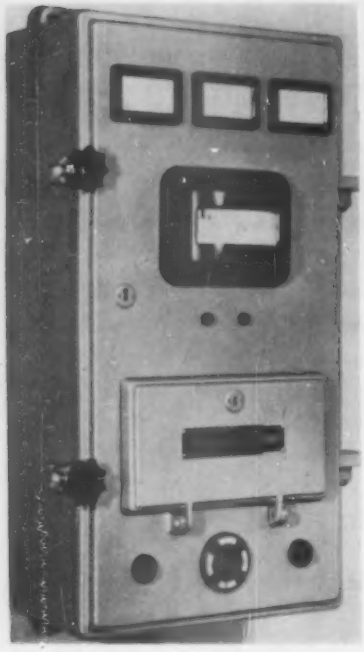

## Table-Size Spectrophotometer

The Spectronic 505 by Bausch & Lomb offers versatile operation and simple maintenance. The unit has a pre-selected chart speed that automatically slows down when transmittance or density values change rapidly. The chart paper is 11 x 17 inches. The wave-length accuracy is ±0.5 $m\mu$ and the unit has a built-in mercury source for wave-length calibrations. The scan speed is preselected by a knob in the instrument panel. Six chart speeds are available.

The unit is 36 x 22¼ x 15¼ inches, weighs 185 pounds. The standard model uses 115-v., 60-cycle, a.c. service, but is also available in 220-v., 50 cycle a. c. (Circle E-8 on Reader-Service Card)

## Now—Accurately Controlled Moisture Content

The residual moisture content of fabrics is accurately measured and controlled by the Textometer. Introduced by Mount Hope Machine Co., Inc., the unit is designed for moisture control in slashers, tenter frames, and driers. Moisture content is recorded in the unit's three panels, which the operator can read at a glance.

Usually the operator judges moisture content by touch, which is difficult on cloth hot from a dryer. But with the Textometer, guesswork is eliminated and in many instances machine speed can be increased. When the instrument is equipped with an automatic control unit, the machine speed is automatically adjusted to maintain a predetermined moisture-content level. This unit can be used on any fabric—sheer or heavy. (Circle E-7 on Reader-Service Card)

## Same-Size Package—30 to 40% More Yarn

The Maier F-Type flyer, offered by Watson & Desmond, Inc., lays the roving closer together, increasing bobbin weights 30 to 40%. The roller, which is equipped with an SKF bearing, is under spring tension. The unit lays the roving close together (without friction on the bobbin) but does not increase layer thickness. Roving is compressed.

The flyer can be used on cotton, wool, or man-made fibers. Efficiency is increased and you get a longer run per doff, plus less creeling at spinning. These units will fit any type of roving frame and are adaptable to any spindle spacing. (Circle E-9 on Reader-Service Card)

# Equipment and Supply News

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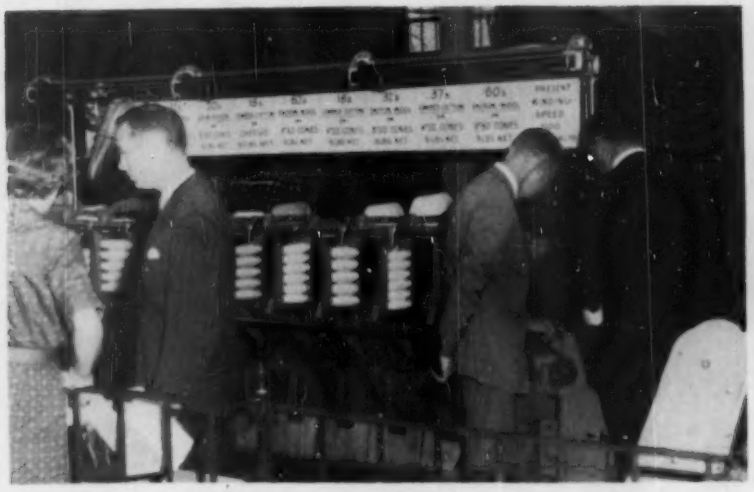
**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**



## 10 Spindles Wind 10 Different Yarns

This winder, called Autoconer, winds any yarn count from 6s to 60s. Each spindle operates independently. The unit, offered by Terrell Machine Co., makes any type of package, cone or cheese, using a 6-in. traverse.

It can also make knitting cones with accumulating taper. Maximum package weights are 8 pounds at 12-in. diameters.

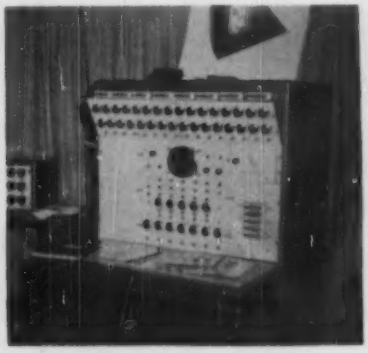
The 10-spindle sections are self-contained units. One knotter, who ties a fisherman's knot, patrols each section. Knotting time is 5 to 6 seconds. The winding speed goes up to 1300 yards per minute. The machine has a built-in cleaner (combining blowing and suction action) that keeps the machine and the winding room free of lint. (Circle E-10 on Reader-Service Card)

## Better Jig Dyeing, Constant Cloth Speed

This dye jig, called V H-Super, runs at 65 to 130 yards per minute. The cloth speed remains constant from one end of the roll to the other.

The unit, offered by Edda International Corp., is constructed of stainless steel wherever the liquor touches. Cloth tension is adjusted by a dial calibrated in pounds. The unit is also equipped with cloth expanders, one for each main roller, which pivots at the bottom of the vat. The jig is equipped with central lubrication.

Three types are available—VH-Super-600 handles 44- to 76-in. cloth on 24-in. rolls, VH-Super-800 handles 44- to 91-in. cloth on 32-in. rolls, and VH-Super-1000 handles 44- to 91-in. cloth on 41-in. rolls. These units are available with a discharge expander and squeeze roller for up to 3500-lbs. pressure. (Circle E-11 on Reader-Service Card)



## Color-Matching Problem Solved

The Colorant-Mixture Computer takes the values from a spectrophotometric curve and determines the dyestuff required to match the shade. Developed by Davidson & Hemmendinger, it is adaptable to quality and production control for dyeing fabrics. When used for matching shades of unknown dyestuff, the unit informs the dyer if the proper colorants have been chosen or if he should use a different dyestuff.

Calculations take about five minutes per formula when the colorant is known, as in the case of correcting a production batch. Compared to conventional color formulation, the computer cuts in half the number of dyeing trials required. (Circle E-12 on Reader-Service Card)

**E-13—Tip bunch for filling bobbins** can now be put on at the spinning frame. The Bild-O-Matic machine, adaptable for most spinning frames, controls the complete cycle for building a bobbin. It builds the feeler bunch and the top bunch, then lowers the rail and stops the spinning frame. The tip bunch can also be used for warp bobbins. It improves spooler and winder efficiency. The unit operates in an oil bath with forced lubrication to remote parts. It is designed with unified construction that is completely sealed in a lint-proof housing. Southern Machine Co.

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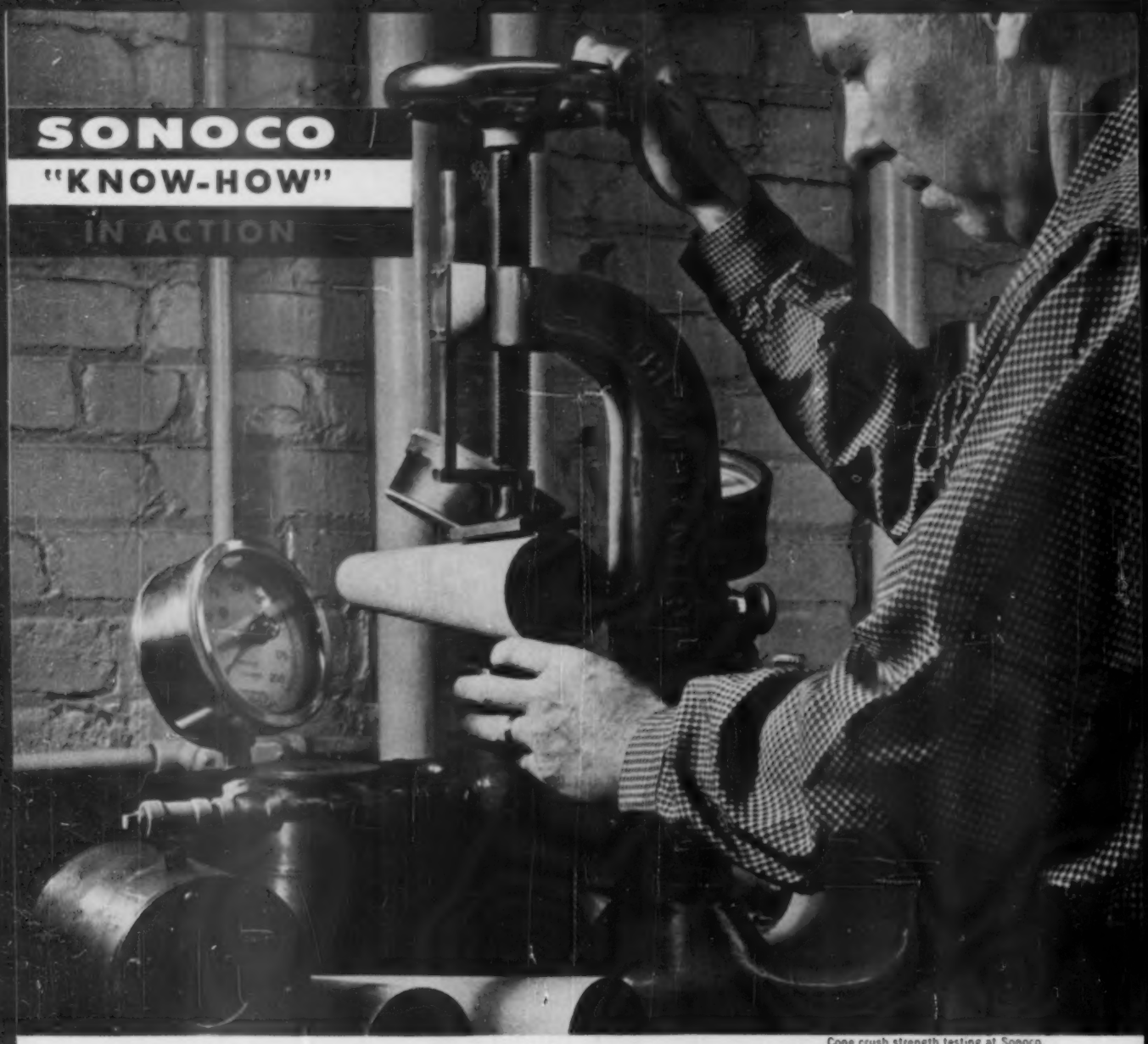


Cone crush strength testing at Sonoco.

# Cone testing helps assure your profits!

This machine, for measuring the crushing strength of cones, is one of several testing devices employed by Sonoco to maintain and improve the strict quality standards of cone production. In addition to testing, this machine is used in the development of special cones for Sonoco customers.

The development of a cone for a specific purpose is not a simple procedure. The *correct combination* of paper, adhesives, surface and taper is required to produce a cone that will give dependable, trouble-free performance in winding operations. However, constant Sonoco research, coupled with skilled engineering and modern production facilities, make this customer service a daily routine. And still, Sonoco cones are low priced, making *one-time-use* practical.

Sonoco cones are typical of the dependable products manufactured by a fully integrated company with 60 years' experience in producing all types of paper textile carriers. *Only Sonoco,* in its field, provides the necessary knowledge, skill and capacities to meet the ever-changing techniques of the textile industry. *Let Sonoco experience help you!*

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## Products for Textiles

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CIRCLE 122 ON READER SERVICE CARD

# Equipment and Supply News

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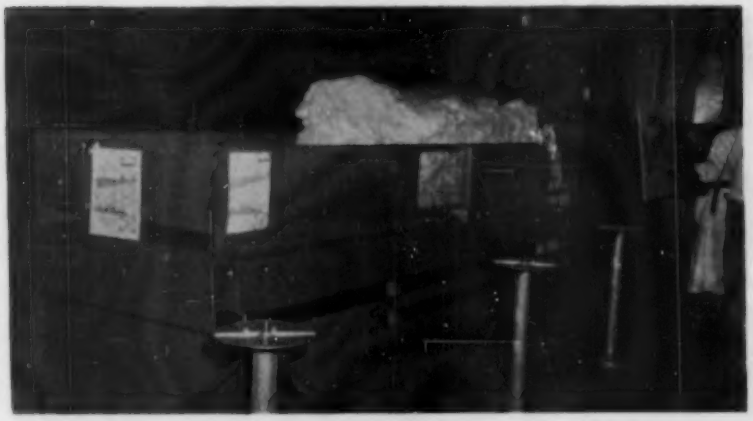
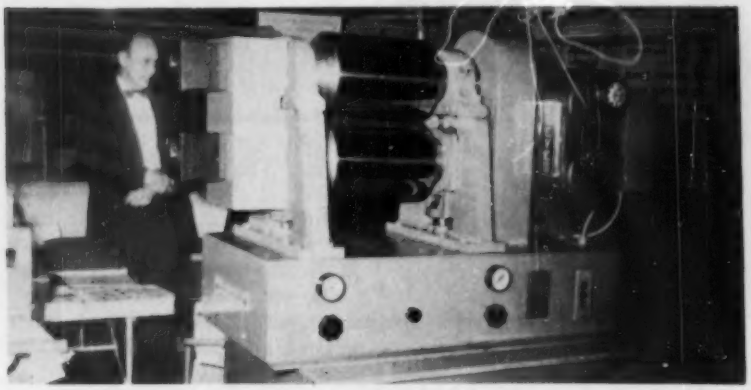
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.



## Bale Blending by Small Pieces

The Multi-Tuft bale blender, developed by James Hunter Inc., makes uniform blends. All bales in grade and all grades in the blend are thoroughly mixed mechanically. Result: Theoretical predictions of mixes become actual and consistent. The cotton is picked from the bale in small tufts by a pinned cylinder. This action not only blends the fibers from each bale, but it also opens the cotton better than hand opening and increases the efficiency of the cleaning operation. Short-term variation is eliminated, which makes for a higher quality yarn with a more constant break factor. (Circle E-14 on Reader-Service Card)



## Laboratory Calender for Nonwovens

This calender, called Quick Change, is designed for hot calendering of nonwovens in the laboratory. Designed by Birch Brothers, Inc., the unit can be bench or table mounted. It has a 5-to-1 variable speed with controls for three-phase current. The rolls are pneumatically loaded to 550 pounds per inch, with dual controls for side-to-side pressure adjustment. The rolls can be steam or electrically heated. Rolls are available to suit any requirement—12-, 18-, or 24-in. diameters. The unit is equipped with automatic roll separation and a Plexiglas nip guard. A special calender is available with 1,000-lb. loading. (Circle E-15 on Reader-Service Card)

**E-16—Sectional bottom roll** makes replacement of bottom aprons easy. Because the unit uses greased ball bearings, there's no oiling. The front-, middle-, and back-line rolls are identical and interchangeable from stand to stand. This system is adaptable to all existing spinning frames. Watson & Desmond, Inc.

**E-17—Drop-box picker** has a built-in oil wick. The wick is cured into the plastic body of the picker. A hole for oiling has been molded into the top of the picker. This oil hole supplies oil to the wick, allows heat to dissipate. McCandless Corp.

**E-18 — Sample-dyeing machine,** Model 101, is 100% stainless steel. The unit will handle up to 12 sample skeins, tapes, cloth samples, or raw stock. It dyes at conventional or high temperature. Agitation is automatically controlled. Unit is heated electrically, using 110-v. current. Gaston County Dyeing Machine Co.

**E-19—V-belt drive,** called Super H C Drive, is designed for small-diameter sheaves and short center distances. It is a narrow but stronger belt that reduces the groove spacing and sheave width from 30 to 50%. Rim speeds can go up to 6,000 fpm. without dynamic balancing of the sheaves. This permits the use of smaller, less expensive, high-speed motors. Gates Rubber Co.

**E-20—Rotary slasher pump** comes in Type 316 stainless steel. The gears are welded to the shaft, in timed position. This insures that the rotors meet and don't scuff each other. Parts are interchangeable, can be replaced in the field without need for special tools. The pump can be manually or air operated. It is available in five sizes, ranging from 10 to 200 gpm. at pressures to 200 psi. Creamery Package Manufacturing Co.

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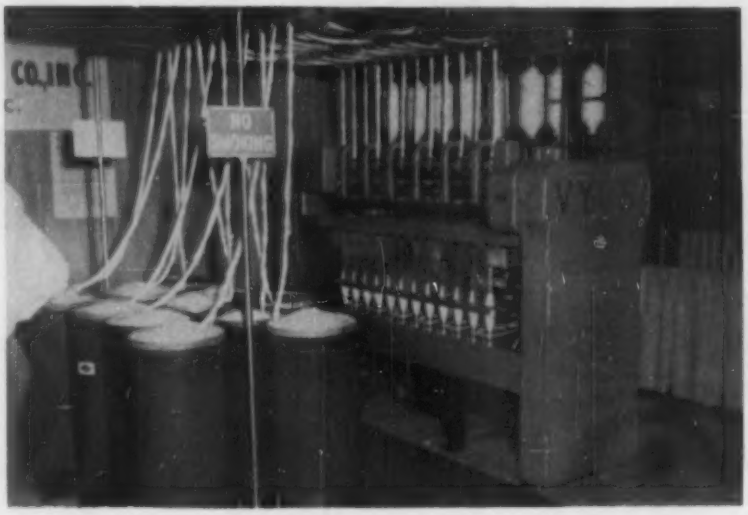
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

## Direct Spinning —2s to 100s

The VY-5 direct-spinning frame, designed by F. A. Young Machine Co., Inc., has drafts from 10 to 650. The unit takes 50-grain can or package sliver of 0.25 hanks roving. It spins all fibers at yarn counts from 2s to 100s.

This spinning frame has anti-friction bearings throughout. Bearings can be relubricated. The bottom roll bearings are self-aligning. Most draft changes require only one gear change. For extreme conditions, two gear changes may be necessary. (Circle E-21 on Reader-Service Card)



## Coiler Handles 24-In. Cans

This coiler, designed by Southern States Equipment Corp., has a center adapter that permits the stand, head, and base to swivel as a unit. The coiler can be offset to handle up to 24-in. diameter cans. It is adaptable to any card. The unit handles can heights from 36 to 42 inches. The coiler features sealed and lubricated ball bearings throughout the head, shaft, and can table. The pillow blocks are self-aligning on both the upright and the calender roll. (Circle E-22 on Reader-Service Card)

## Check Print Register Without Stopping

This print cloth inspector, called Mt. Hope Viewer, is offered by Mt. Hope Machinery Co. It checks print register and quality without stopping the printing machine. The unit requires no special lighting, as light loss in the viewer is negligible. Full-pattern repeats are viewed one at a time.

The viewer runs at speeds up to 400 cycles per minute. A 20-in. repeat can be inspected at fabric speeds up to 222 yards per minute. (Circle E-23 on Reader-Service Card)

**E-24—Automatic weight-control machine** uses sound as the measuring element. The desired quantity of fiber is measured continuously within a rectangular tube, which delivers uniform fiber weight. Any type of natural or man-made fiber can be fed by this machine. Sonic control system offers a wide range of speed. Fiber Controls Corp.

**E-25—Ball-bearing service kit** is available for Dixon Corp. top-roll service. The unit is made for re-greasing and replacing the center bearing type of top roll. Bearings are greased without removing or disassembling the roll. You can grease up to 800 rolls in an 8-hr. shift. Kit includes a hand arbor press for replacing bearings as needed. Dixon Corp.

**E-26—Control unit,** called Orthomat, brings automatic control to weft-straightening equipment. It can be used on any fabric through which light will pass. Three gages are used to determine the direction of the weft. The control panel has a signal light to warn the operator of an S-shape distortion that may require manual correction. Mt. Hope Machine Co., Inc.

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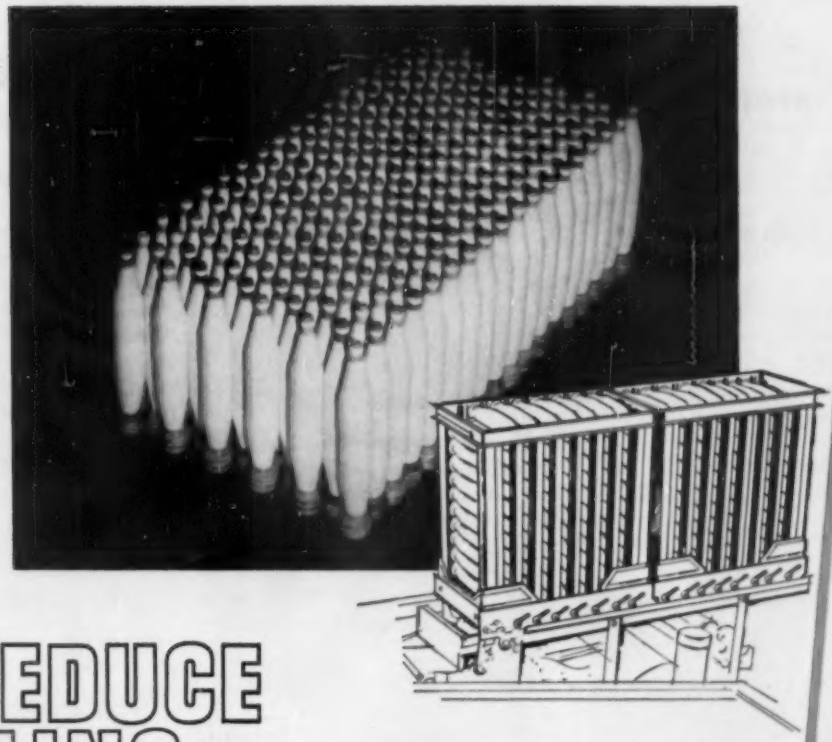
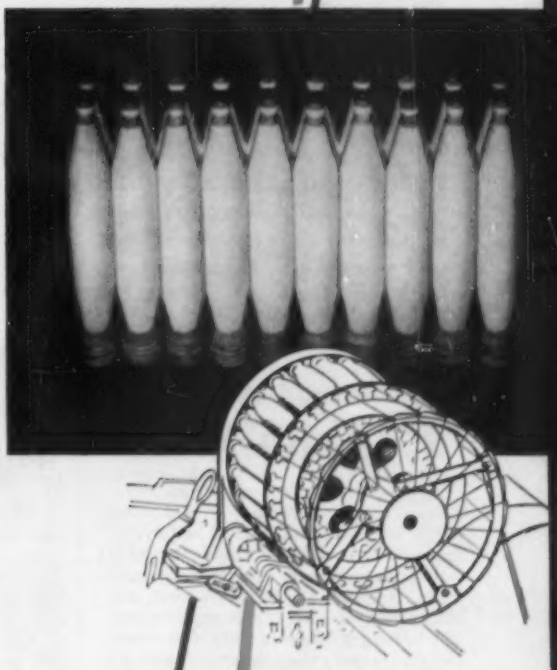


# REDUCE FILLING HANDLING... TO A MINIMUM



The Draper Automatic Filling Magazine *with a bobbin supply of as many as 192 bobbins** reduces weave room costs.

This increased bobbin capacity, over the conventional Rotary Battery *eliminates much of the cost of delivering filling yarn to the loom.* More continuous loom operation, cleaner yarns and fewer cloth seconds are also direct advantages gained from the use of this magazine.

Compare the Draper Automatic Filling Magazine with the conventional battery and see for yourself the many benefits that can be obtained.

For additional information consult your Draper representative.

**1¼" diameter bobbins*

**DRAPER CORPORATION**

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N.C. • SPARTANBURG, S.C.

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This electronic static eliminator is *unconditionally guaranteed* to end all static problems . . . safely, inexpensively . . . the most effective neutralizer available for use on cards, garnetts, warpers, slashers, finishing machines, and all other textile applications. The "*Midget*" assures static-free warps and slivers every time. Simco is America's largest manufacturer specializing in static neutralizers, anti-static cleaning devices and sprays, and meters for locating and measuring static.

*Equip your machinery now.*

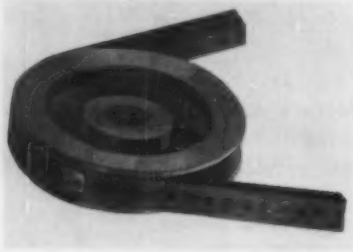
the SIMCO company
920 Walnut Street, Lansdale, Pa.



For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

**E-27—Heaters for drying** and curing operations are available for custom installation or as packaged units. They come in 8 to 360 kw., rated for 150-thousand to 3-million Btu. Air temperatures ranges up to 900 F. using gas and 550 F. using electricity. Despatch Oven Co.

**E-28 — Data-processing systems,** IBM 1410, is designed for intermediate size systems that need in-line random accessability. The expanded unit stores up to 100-million characters. It comes in card, magnetic tape, RAMAC card, and RAMAC tape models. The 1410 system is 2½ times faster than the 1401 system. The character transfer rate in memory is 4.5 micro-seconds. IBM Corp.



**E-29—Perforated V-belting** can be joined by a fastening device that requires only a screwdriver to attach. This belting is bought by the foot and cut to the desired length. The steel fasteners are prebent to eliminate bending stresses and there is no metal-to-metal contact. The belt is available in standard types, in full-length rolls, which fit all standard drive sheaves. Rockwood Pulley Mfg. Co.

**E-30—Fabric-width meter,** the Margin Meter, draws a chart showing the exact inside width of fabrics in production. A compensator automatically subtracts for selvage on each side. The meter uses snagproof wands coupled directly to sensitive electrical transmitters. If the fabric is in an assortment of widths, the instrument can be used as a deviation recorder, with a range to ± 5 inches. Matrix Controls Co., Inc.

**E-31—Pressure balances** are accurate to 0.05%. Pressure values can be read up to 100,000 psi. The unit has pilot lights to show when balance is achieved. It is available in five models, with limits ranging from 10,000 to 100,000 psi. American Instrument Co., Inc.

**E-32—Air filter** uses a single sheet of plastic material, with 30 to 80 cells per inch for large dust-holding capacity. It can be washed with a spray-head hose without removal from the frame, or removed and cleaned in a detergent when heavy process dusts are present. Three models are available which have capacities up to 1800 cfm. and velocities up to 450 fpm. American Air Filter Co., Inc.

# Equipment and Supply News

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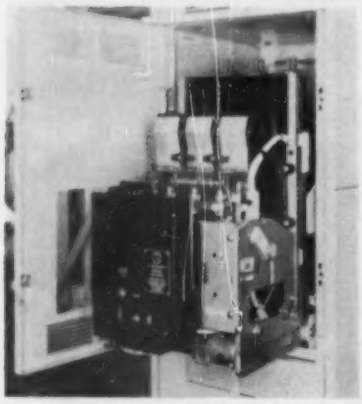
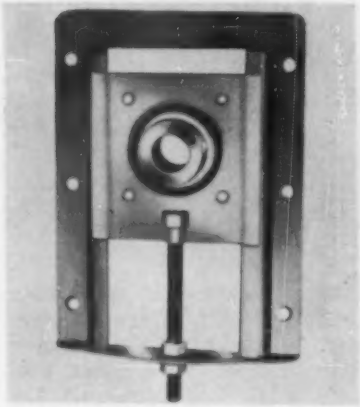
**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

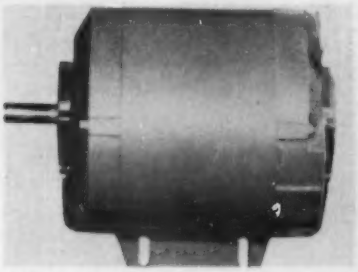


**E-33—Circuit breaker,** the K-Don, protects against faulty currents up to 200,000 amps. The unit combines stored energy breakers and Amp.-trap current limiting fuses, which interrupt short circuit current in less than a cycle. Three trigger fuses, linked to a common tripper bar, prevent single phasing. Two frame sizes are available: the K-Don 600, with a continuous-current rating of 30 to 600 amps., and the K-Don 1600, with rating of from 150 to 1600 amps., for applications up to 600-v. a.c. or 250-v. d.c. I-T-E Circuit Breaker Co.

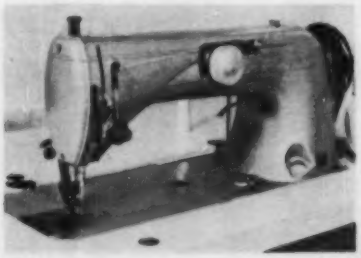


**E-34—Take-up bearing unit,** for light duty, comes with or without the frame. It is prelubricated for long-service life, and has laminated neoprene felt seals. The bearings are available for shaft sizes ranging from ⅝ through 1 inch. Roberts Mfg., Inc.

**E-35 — Bobbin-monitor system** warns a sewing-machine operator, with a light, when there are two yards of thread left on the bobbin. System is self-contained and uses standard bobbin. Monitor is adaptable to over 2,000 varieties of sewing machines. O&W Sewing Machine Attachment, Inc.

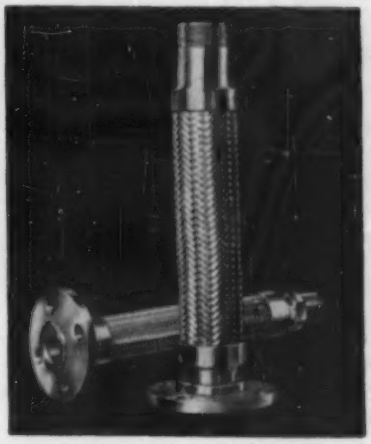


**E-36—Electric motor** in fractional sizes, named the "Duty Master", is available with either ball or sleeve bearings. It is permanently lubricated and double-shielded. Horsepower ratings are 1/20, 1/12, ⅛, 1/6, ¼, ⅓, ½, or ¾. Reliance Electric & Engineering Co.



**E-37—Sewing machine** features an improved thread control and pressure foot action. The pressure foot has low-inertia characteristics that insure continuous contact between feed dog, fabric, and presser foot with light pressures. The foot is spring loaded and adjustable for various weight fabrics. The thread pull-off device runs mechanically from the mainshaft and draws the thread from the cone under uniform tensions. And the rotary-thread tension delivers the thread to the needle smoothly. Union Special Machine Co.

**E-38—Dispersed spindle oils,** called Vexilla D, come with high film strength and lubricating effect for high-speed, large-package operation. The oils' foam resistance reduces yarn spoilage by preventing oil atomization and fog damage to yarn on adjacent spindles. A surface-active agent allows oil-stain removal from yarn by emulsification. High viscosity index gives low-starting torques. Shell Oil Co.



**E-39—Flexible connectors,** called HAP, absorb or reduce the effect of vibration, thermal expansion or misalignment in pump installations and pipelines. The connectors are made of flexible metal tubing, covered with wire braid to guard against pressure stretching. The units are available in threaded or flanged ends in sizes ranging from ¼ to 16 inches in stainless steel, Monel, hot-dip galvanized steel, or bronze. They will handle temperatures up to 1200 F. and pressures to 1500 psig. Allied Metal Hose Co.

**E-40—Textile casters** for doff boxes, lap trucks, and roving trucks have deep thread guards for snag protection. Swivel-plate and rigid-plate casters are available with wheels from 3- to 8-in. diameters and load ratings of 60 to 750 pounds. Faultless Caster Corp.

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# Equipment and Supply News

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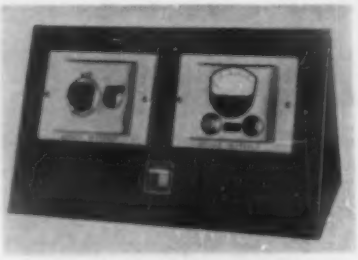
**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

**E-41 — Multi-purpose lubricant,** Keystone 88X, is now available in 14-oz. cartridges for use in any lever-type guns. The lubricant is designed for general industrial use, particularly for use on rotating or sliding surfaces and for bearings. Keystone Lubricating Co.

**E-42—Adhesives for plastics,** Plastix Wet Stick and Plastix Heat Seal, are designed for adhering plastic to acetate, paper, wood, leather, foam rubber, cotton, and other materials. These adhesives are water based, but the bond is resistant to washing and dry cleaning. Wet Stick is used for flocking on plastics, while Heat Seal is made for attaching decorative ornaments to finished products. Adhesive Products Corp.

**E-43—Diaphragm relief valve,** the Farris 1000 Series, is vapor tight and immune to corrosive chemical action. Spring and guides are isolated to avoid corrosion. Valve is available in a wide choice of materials, and in sizes from ½ to 2 inches. Farris Engineering Corp.

**E-44—Sight feed valve** for liquids incorporates a swivel arrangement that allows the viewing windows to turn in any direction. Volume, from complete shut-off to full flow, is controlled by a needle valve. Available with ¼-in., ⅜-in. or ½-in. pipe threads. Oil-Rite Corp.



**E-45—Motor load controller,** Loadtrol, used with an actuator, the Shaftrol, provides means of maintaining preset load on drive motors of process equipment, machine tools, or web-handling machinery. It is also used to get maximum output from a crusher, saw, grinder, converter, or winder. The controller has all solid-state components, with no tubes or relays. It will handle a wide range of motors. Shaftrol may be shaft mounted and comes in wide choice of torques, voltages and enclosures. Both units offer explosion-proof enclosure. Jordan Controls, Inc.

**E-46—Bobbin feeler** will not sideslip as long as thread remains on the bobbin. When the bobbin empties, the spring and pivot design assures a positive motion to actuate the transfer mechanism. Instant recoil prevents feeler-tip marks, broken picks, and run-out. H. F. Livermore Corp.

**E-47—Shelf truck,** equipped with four shelves, has 5-in. rubber casters, two rigid and two swivel. The truck is of heavy-duty, all-steel construction. Two models are available —18 x 30-in. tray size for narrow aisles, and a 24 x 36-in. tray size. Bay Products, Inc.

**E-48 — Dual-switch temperature control,** type E32NA, covers a range from —150 to 650 F. It is used to control temperature in ovens, dyebaths, and drying chambers. The unit can control up to four independent circuits. The index scale is calibrated in the same units as the indicating scale to make for easier reading. The control unit is rated for 15 amps., 115 to 230 volts, a.c. United Electric-Controls Co.

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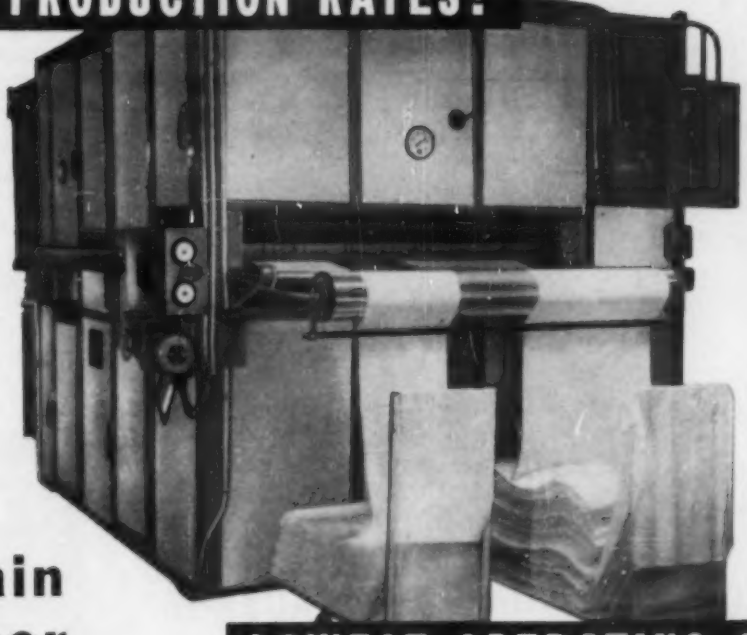
**HIGHEST PRODUCTION RATES!**



**LOWEST OPERATING COSTS!**

**obtain higher profits with**

# THE REVOLUTIONARY SACO-LOWELL/FLEISSNER DRYING SYSTEM

The Saco-Lowell/Fleissner System, manufactured in our Sanford-Jonesboro, N.C. Plants, is adaptable to all types of fabrics not requiring tentering. It is especially suitable for the *processing of knitted goods* and has revolutionized this type of drying. Shrinkage is approximately the same as obtained with tumbler type dryers.

The Saco-Lowell/Fleissner Suction Drum Dryer evaporates three times the quantity of water per square foot of drying surface compared to any other drying system and has adjustable overfeed from minus 20 to 150%.

**THESE MAJOR ADVANTAGES CUT COSTS, INCREASE PROFIT:**

1. **Extremely low steam consumption**
2. **Cleaning periods virtually eliminated**
3. **Most uniform final moisture content**
4. **Shortest drying time — no discoloration**
5. **Entirely tensionless drying**
6. **Unique agitation process permitting maximum shrinkages**

*Contact your local Saco-Lowell Sales Office for further details.*

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Textile Machinery Division

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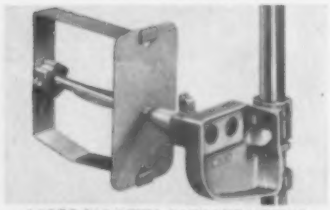
CIRCLE 139 ON READER SERVICE CARD

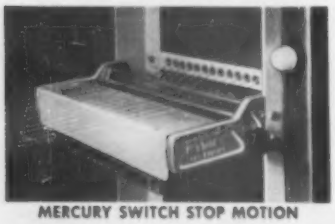
# HERE'S HOW TO HANDLE ANY PACKAGE WITH McBRIDE VERSATILE PACKAGE HOLDERS

McBride Bowed Spring Spindle with cone and large package holders can accommodate every type of package used on Over End Take-Off today. Adapters feature the quick change design for instant placement or removal, to **cut down changeover time loss.**

UNIVERSAL CONE HOLDER



LARGE DIAMETER PACKAGE HOLDER



MERCURY SWITCH STOP MOTION

Let McBride study your creel requirements. You will be pleased with the improved efficiency, ease of operation, and rugged design of McBride creels. Creels for warping, weaving, winding, twisting, tufting, and knitting. Special laboratory warping units designed to suit your requirements.

Complete engineering service is part of every McBride installation

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## Equipment & Supply News

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**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

**E-49—Electric motor** has positive protection against heat failures. Solid-state thermistors, in the motor windings, sense excessive heat and either warn of possible trouble or shut off the motor. Changing winter-summer heaters is unnecessary. Westinghouse Electric Corp.

**E-50—Pyrometer controller** features solid-state control and accuracy of one percent within an ambient temperature range of 50 to 120 F. The control circuits include 115 and 230-v. power terminals. The unit can be wall or panel mounted. It has a 6-in. scale with non-parallax mirror and thermocouple-burnout protection. The completely enclosed unit measures 10x8x8 inches. Daystrom Inc.

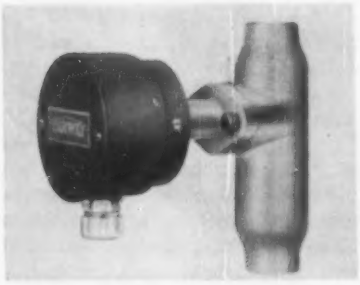
**E-51—Two-wheel industrial hand trucks** come in sizes ranging from 400- to 1,000-lb. capacity. Standard models handle all types of boxes, cartons, and packages. It is available in wheel sizes from 5 to 10 inches, with solid rubber or pneumatic tires. Special trucks are designed for drum or reel handling. It will handle up to 40-in.-dia. reels weighing up to 1,000 pounds in weight. Harper Trucks, Inc.

**E-52—Ball valve** has top entry. The ball (flat on top and bottom) is extracted with a hook on the valve handle, allowing quick access to the seats without breaking the pipe. It has a bronze body with screw ends, and is available in ¼- to 2-in. pipe sizes. Lunkenheimer Co.

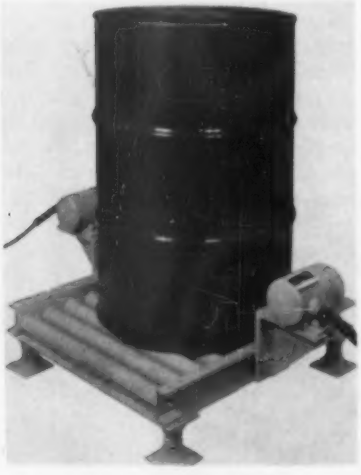
## Equipment & Supply News

. . . *Begins on page* 127

**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**



**E-53—Sensing device,** called W-I-T, is used for detection and control of liquid system variables. It uses a patented wire-in-tubes element that transmits motion through a pressure-tight wall without using bellows, seals, or stuffing boxes. This action will indicate the change or operate a switch. The unit controls level, flow density, or temperature in process tanks. Yarnall-Waring Co.



**E-54—Vibrating platform** for packing containers on standard roller conveyors is designed for automatic packaging systems. Electric vibrator units provide the settling action. The unit may be installed in existing conveyor equipment. Where conveyor height is over one foot, it can be mounted under the platform. The unit is 24 inches square, available in 110 to 550 v., 3-phase, a.c. Cleveland Vibrator Co.

. . . *Turn the page*


COTTON ACETATE VINYON
WOOL NYLON SARAN MY
SILK ORLON* POLYETHYLEN
FLAX DACRON* VICARA*
RAYON ACRILAN* GLASS
FORTISAN* TEFLON* DYNEL
POLYPROPYLENE CAPROLAN
CRESLAN* ARNEL WOOL
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*Keeping pace with new fiber development...*

# TESTING TELLS THE TALE with Atlas-Ometers

The introduction of so many synthetic fibers since World War II, while revolutionizing the textile industry, has presented problems concerning the color fastness, weathering properties, detergent reaction, and washing and wearing of these new fibers.

Controlled, accelerated and exactly duplicated tests with ATLAS-OMETERS will give you the answers—accurately and quickly—to new fiber vagaries. You will find that *one* ATLAS test is worth a *thousand* guesses.

*Write for bulletins on ATLAS-OMETERS*

Weather-Ometer® $2755 up. Fade-Ometer® $1350 up. Complete with supplies. Launder-Ometer® $875 complete with accessories and supplies. Random Tumble Pilling Tester $485 to $890. Accelerator® $485.

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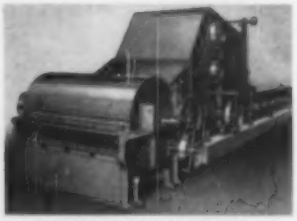
*Sales representatives in principal cities throughout the world*

Since 1852

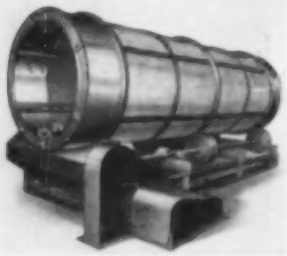
FIBRE PROCESSING MACHINERY by SARGENT

From Bale Opener through Dryer, Sargent's modern fibre processing system gives you completely automatic continuous production . . . an uninterrupted straight-line flow of quality-protected fibres at an economy you cannot afford to overlook. Let us tell you more.

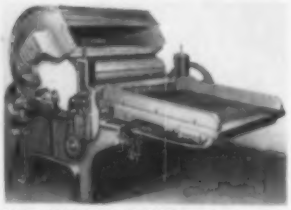
FEEDERS • OPENERS • PICKERS • BLENDERS
WASHERS • DRYERS • TOP & YARN HANDLING
AND SPECIAL PURPOSE MACHINERY



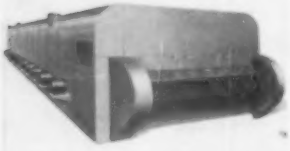
BALE OPENER AND PICKER
Continuous opening, picking and feeding, cotton linters or staple. Excellent on machine-picked cotton.



SQUIRREL CAGE DUSTER
Continuous dusting of heavy grease wools, waste, rags. Also very efficient blender.



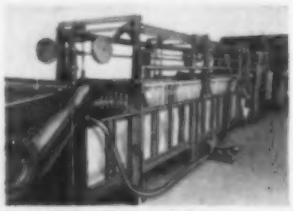
WET AND DRY PICKER
Highly versatile—for fibres after bleaching, after dyeing. Works equally well with wet or dry fibres.



STOCK DRYER
Leads all dryers for performance and dependability on scoured or dyed wools, cotton, synthetics.

MIXING PICKER
For continuous blending—all fibres.

FIBRE PROCESSING SYSTEM
Section of recent installation showing high economy, complete dependability. Fibres are not handled from opening to drying.



STAINLESS STEEL WASHER
For scouring, bleaching, acidifying.

C. G. SARGENT'S SONS CORPORATION
Graniteville, SINCE 1852 Massachusetts

PHILADELPHIA • CINCINNATI • ATLANTA • CHARLOTTE • HOUSTON • CHICAGO • DETROIT • TORONTO

## Equipment & Supply News

. . . *Begins on page* 127

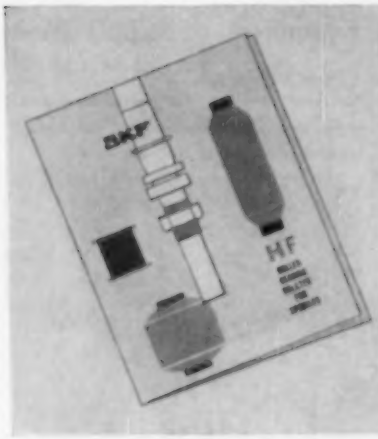
**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

**E-55—Solids measurer,** Model 930 air-comparison pycnometer, checks volume, density, and porosity. It requires no liquids, gas-pressure determination, or temperature control. The unit, with a sample container of 50 cc., is accurate to 0.1 cc. Applications include chemical mixture determinations, porosity determination of porous materials, and mineral identification. Beckman Instruments Div.

**E-56—Porcelain pipe,** called Steelclad, is permanently armored with 10- to 16-gage steel. An expansion ring of steel is incorporated to overcome expansion differentials. The porcelain material, designed for use with extremely corrosive liquids, is unaffected by all acids except for phosphoric and hydrofluoric. The pipe is recommended for service up to 150 psig. and 400 F. Lapp Insulator Co.

**E-57—Machine mount,** the Bolt Thru Wedgmount, is designed for control of vibration where safety code requires bolting of machine to the floor. The mount will reduce vibration up to 85%, and its double-wedge construction offers precise quick leveling. Clark, Cutler, McDermott Co.

. . . *Turn to page* 144




**NEW SKF ROLLER BEARING BOLSTERS** offer smooth acceleration, vibration-free operation and precision plumbing. Two models available—Type HF for heavy package, high-speed spinning, Type HZ for heavy-duty twister spindles.

**NEW PK SERIES PENDULUM WEIGHTING ARM** for spinning cotton, synthetic, woolen and worsted yarns under today's heavy drafting pressures. SKF-developed feature provides automatic alignment throughout drafting.

**NEW DRAFTRITE® ROLLER BEARING TOP ROLL** assures evenness of yarns, under heavy drafting pressures, and reduces chance of ends down. Two types available—one for lateral guidance, one for center suspension drafting. 6028

# SKF backs up its new textile specialties with complete product data

What's the maximum permissible load for the new Draftrite top rolls? Can the new PK pendulum weighting arms be loaded and unloaded individually? What's the recommended break-in period for those new HF and HZ roller bearing bolsters?

To answer these questions—and many others—SKF offers a comprehensive booklet on each of its new textile specialties.

These data books are complete. Each contains facts and figures, photos and diagrams of the product's design, features, installation and maintenance.

References like these are indispensable when you're considering new equipment, modernizing machinery or simply replacing worn-out parts. Because with them, you can go right ahead with your plans—with all the pertinent facts on hand. Of course, an SKF textile specialist is always available for consultation.

To get copies of these valuable time-savers, just

**CALL OR WRITE SKF TEXTILE SALES OFFICE**

Front Street and Erie Avenue
Philadelphia 32, Pa.
GArfield 6-9620

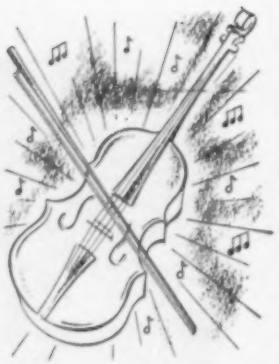
2935 South Griffith St.
P.O. Box 3031, Charlotte 3, N. C.
JAckson 3-6232

*P.S. Ask, too, for complete data on SKF Type "SR" Tension Pulleys. They eliminate tape jump-offs, ensure uniform spindle speeds and permanent pulley adjustments. And they only need re-greasing after 20,000 working hours—about once every 3 to 5 years!*

*Spherical, Cylindrical, Ball, "Type" Tapered and REED Miniature Bearings*

EVERY TYPE—EVERY USE
SKF®
SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

# Why Fuss, Fret or Fiddle Around . . .



**when you can use**

**MECHO** *AIR GUIDERS*

**You can't** chalk up production or show a profit for time spent fussing with fabric guiders that need constant checking, adjusting or repairs.
Mecho Air Guiders speed up fabric processing and pay their own way in a hurry!

There are no production time losses with Mecho. You can adjust it while in operation. Handles lightest fabrics or heavy duck. There's no spoilage . . . Mecho can't spatter and the ingenious selvage finger can't turn a double edge. There are no weights or linkages . . . Mecho's simple design is trouble-free.
What's more, you can depend on Mecho to guide within 1/8 of an inch of the mark, and maintain constant alignment, from 1 to 400 ypm.

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THE **Guider** SPECIALTY COMPANY

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CIRCLE 251 ON READER SERVICE CARD

**TOMPKINS** SPRING NEEDLE **D-1** CIRCULAR KNITTING **CARPET MACHINE**

Now you can produce 12 or 15-ft. wide carpet and carpet backing — including paper scrim — *faster, at lower cost* with a 54" or 70" TOMPKINS D-1. Both models use standard Tompkins parts *plus* the big quality and economy bonus of the time-proven Tompkins knitting principle. *Write for full details . . .*
TOMPKINS BROS. CO. • 623 Oneida St. • Syracuse 4, N.Y.
*Circular Spring & Latch Needle Knitting Machines Since 1846*


## Equipment & Supply News

. . . *Begins on page* 127

**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

**E-58—Office paper cutter,** called the Triumph, comes in 14- and 18-in. cutting widths. The larger machine cuts over a ream of paper, and up to 5,000 sheets in 10 minutes. It adjusts in divisions of $\frac{1}{32}$-inch down to a ½-inch cut. Michael Lith Sales Corp.

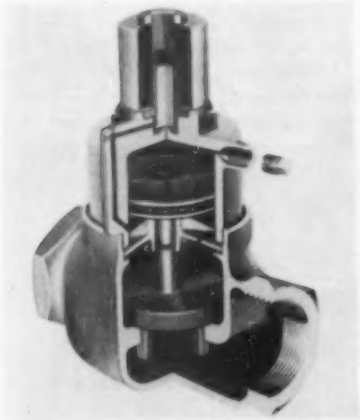
**E-59—Portable elevator** for drum handling is made with standard forks or optional platform plate, barrel grab, and dumping device. It will handle drums in horizontal or vertical positions. The grab is engaged when the barrel is pushed against it and drums can be stacked two high. Models are available in 500- to 2,500-lb. capacities. Revolvator.

## Equipment & Supply News

. . . *Begins on page* 127

**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

**E-60—Color matching** of fabrics or yarns can be done in 30 seconds with the Colormaster. The unit is designed for precision matching between test sample and a standard color. It's a tri-stimulus filter colorimeter. Sample holders are available for yarns, fabrics, sheets, and liquids. The unit uses 95 to 125 volts, 50 to 60 cycle, a.c. It is 14x 7x18¾ inches and weighs 40 pounds. Manufacturers Engineering & Equipment Corp.



**E-61—Liquid valves** give remote control for opening, closing, and timing of pipe lines. Accurate liquid flow can be scheduled when the valve is linked with a timing switch, sequence timer, or cam switch. Model 1825 has a solenoid wired to a timing device. Model 25 is linked with tubing to a hydraulic controller which actuates the valve. Rated for 150 psi. water at 150 F. and available for 1- to 6-in. pipe. FEBCO, Inc.

**E-62—Rotating electrical connector** is equipped with silver-plated contacts for long life. Continuous free rotation will not twist lines or conduits. Ball bearings eliminate the need for lubrication. Available with a large variety of connectors and inlets, including axial connectors for rotating or oscillating applications. Standard model (2½-in. diameter and 5 inches long) is 5 hp. Ward-Riddle Co.


**WHEN THE RECEPTACLES ARE KENNETT, PROCESSING COSTS GO DOWN! . . .**

The reasons are simple. Kennett Receptacles handle delicate yarns and fabrics more gently—cut loss from damaged yarns and fabrics. Kennett Receptacles last longer—save on replacement costs. And Kennett Receptacles are easier to handle—speed your processing.

Kennett Receptacles can be slammed, banged, dropped and manhandled in a mill for years. Yet their glossy-smooth surface doesn't crack, splint, crush or splinter. They're made of tough, lightweight National Vulcanized Fibre, a *plastic* that has never been equalled for containers in the textile industry.

Standard Kennett Receptacles are available in a huge range of styles and sizes, covering every ordinary need in textile processing. Special requirements are often filled with only a slight modification of a basic Kennett style. And all Kennett products are backed by National's years of experience and proved dependability. For full information contact your nearest National sales office. Or write direct for our full line folder. Address Dept. BB-12.

KENNETT
RECEPTACLES BY
NATIONAL
VULCANIZED FIBRE CO.
WILMINGTON 99, DELAWARE

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THE SURE TEST . . . SCOTT!

NEW PUSH-BUTTON CONTROL SIMPLIFIES PHYSICAL TESTING

**THE SCOTT MODEL CRE** Constant-Rate-of-Extension Tester offers you the ultra-high accuracy of inertialess electronic weighing . . . *plus* effortless automatic operation that takes the work and weight handling out of physical testing! At a touch, the simple finger-tip controls of the Model CRE provide a variety of crosshead speeds, complete crosshead control and a wide range of test capacities . . . enabling even the non-technical operator to obtain detailed test results faster, easier, and *at amazingly low cost!*

**VERSATILITY** is another time-and money-saving feature of the Scott CRE Tester. This simple yet super-sensitive tester is designed for use with Scott's more than 150 different clamps and holding fixtures to meet ASTM, ISO and Industry Test Methods and material requirements. Moreover, Model CRE can be set up quickly for tensile, tear, adhesion, burst, seam construction and many other physical tests . . . with ranges from the lowest up to 1000 lbs. or 500 kgs.

**FOR PRODUCT DEVELOPMENT, QUALITY CONTROL,** and countless other tests that make the difference between profit and loss . . . you can be sure *your* product's qualities meet industry standards, when you make the sure test . . . Scott!

*Write for CRE Brochure TODAY!*

Scott Testers, Inc.
95 Blackstone Street
Providence, Rhode Island

SCOTT TESTERS
THE SURE TEST . . . SCOTT!

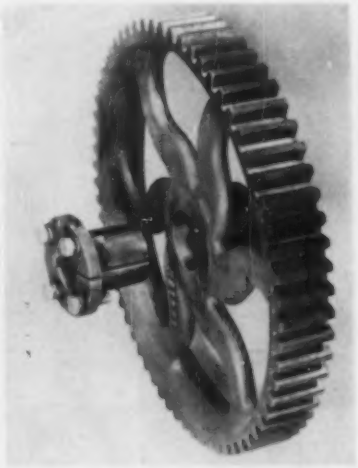
## Equipment & Supply News

. . . *Begins on page* 127

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

**E-63—Portable vacuum** for industrial use may be carried on the back. A set of snap-on wheels allows floor use, and it may be mounted on a wall for use at work areas. Power supply is a 1-hp. motor. A cloth filter bag gives ⅓-bushel capacity. Advance Floor Machine Co.

**E-65—Hand tachometer,** the Tripletach, features small size and light weight. The movement is completely sealed, and has printed circuitry. Three speed ranges are available: Type A, which measures from 200 to 10,000 rpm; Type B, from 100 to 5,000 rpm.; and Type C, from 20 to 1,000 rpm. Three scales permit accurate readings, and accuracy is ±1% of full scale deflection. Metron Instrument Co.



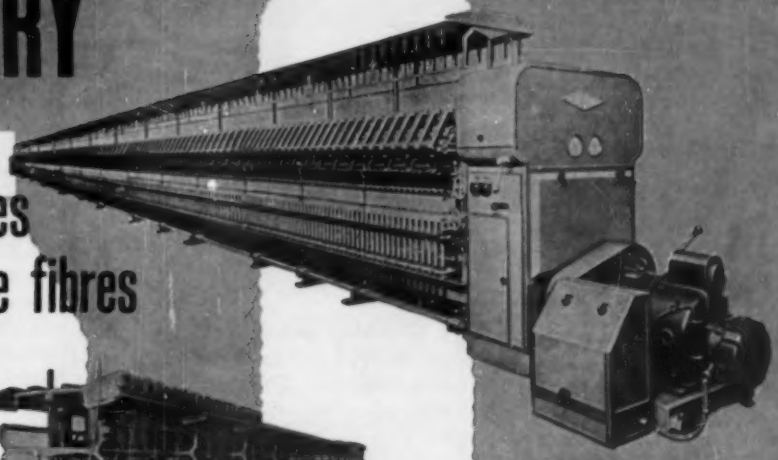
**E-64—Cam-shaft gear** is designed to reduce downtime and improve weave-room production. Tapered bushing permits gear removal without special equipment. The bushing can be forced without breaking. This cam-shaft gear is adaptable to any type loom. Louis P. Batson Co.

**E-66—Manual loom starter** gives overload protection. Spring-loaded contact points are linked to the operating handle so that an overload, melting a relay, causes the points to separate and removes starting control from the handle. Unit is rated for 5 hp., single phase, 440 to 550 volts, a.c.; 7½ hp., 440 to 550 volts, a.c.; or 2 hp., 230 volts, d.c. The unit is protected against lint and dust entry by closed-cell, rubber gasketing. Allis-Chalmers Mfg. Co.

. . . *Turn to page* 148

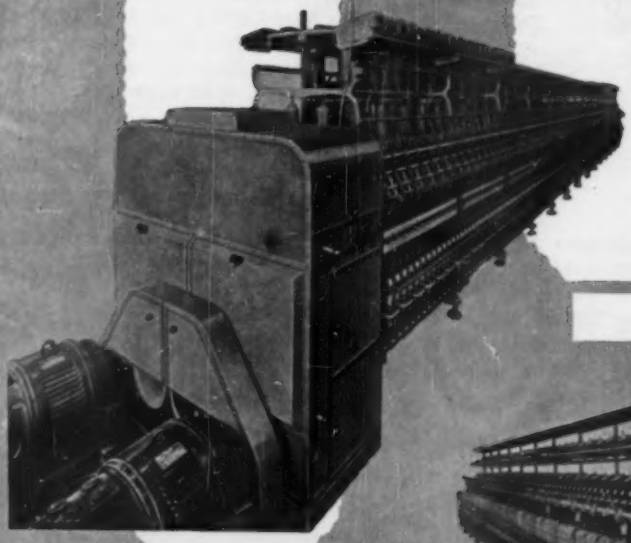
# MACHINES FOR THE TEXTILE INDUSTRY

roller spindles
for all textile fibres



Cotton ring spinning frame

Ringtwisting frame for carded wool



Wool ring spinning frame

# COGNE

ITALY
TORINO
via s. quintino 28

high quality special steels

Out Goes
LINT · FLY
TRASH
from your
SPINNING FRAMES
and ROVING FRAMES
Quickly • Economically

by using
M-B AMOSKEAG PNEUMATIC ROLL PICKER
New, Improved MODEL 59

A pneumatic tool especially designed for the specific purpose of REMOVING LINT and FLY from the top rolls of Spinning Frames and Roving Frames. Saves time and does a better job by substituting mechanical cleaning instead of laborious hand methods. Air deflector prevents fly and lint being blown into yarn when spinning. Adjustable valve permits any desired spindle speed.

Write for Literature

M-B PRODUCTS
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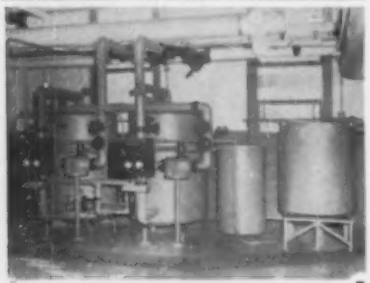
DETROIT 3, MICHIGAN

CIRCLE 252 ON READER SERVICE CARD



INVERSAND WATER SOFTENER PLANT
producing
CLEAR IRON-FREE
100% SOFT WATER
Often For As Little As
1¢ per 1000 Gallons

Troubled with harshness, poor finish, uneven shades, redyes, seconds, and other product difficulties—?? The secret of uniformity may lie in your water supply. May we check it for you?

HUNGERFORD & TERRY, INC.
Clayton 9 New Jersey

## Equipment & Supply News

. . . Begins on page 127

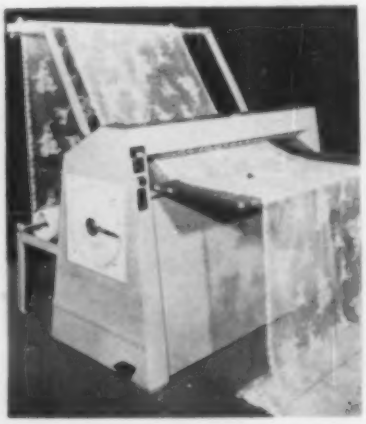
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

**E-67—Micrometer handles** that fit all NUPRO fine metering valves are now available. The handle registers zero when the valve is closed. The position of the stem can be read to 0.001 of an inch. Units are stainless steel, plated with chrome. Nuclear Products Co.

**E-68—Magnet clutch** has a stationary magnet, is ball-bearing mounted. Coils are wound for voltages up to 115 d.c. Clutch has torque rating of 45 foot-pounds, is made for split or through-shaft mounting. Stearns Electric Corp.

**E-69—Temperature transmitter,** actuated by gas, complements the mercury-actuated Sensaire 202T, and can be used where mercury is prohibited. The transmitter is available with ranges that span 100 F., 200 F., or 400 F. Measurements down to —400 F. can be made with 1% accuracy. Interchangeable thermal systems may be installed in the field to change ranges. Taylor Instrument Co.

**E-70—Pipe surface thermometer** attaches instantly with spring clips. No branching or drilling is needed, and it can be used on pipes up to 3½ inches in diameter. The instrument is precalibrated to avoid heat-loss error. Model APFT 460 is for temperatures from 32 to 320 F. and Model APFT 461 for —14 to 134 F. The dial is 2½ inches in diameter and is graduated in 2-degree divisions. Abrax Instrument Corp.



**E-71—Cutting machine** is designed for textiles that are cut on a straight line. It's particularly suited for curtain and drapery fabrics. Table is tilted at 30 degrees when the material is feeding and rises to the horizontal for cutting. Based on an operating rate of 2 seconds per cycle, 900 cuts per hour are produced. Cutting accuracy is ⅛-inch in 120-in. lengths. The measuring box has a clutch plate with limit-switch sensitivity of 0.01 inch. The drive ratio is 10 to 1. With the drive ratio of 10 to 1, the actual measuring accuracy is within 0.001 inch. Sjostrom Machine Co.

## Equipment & Supply News

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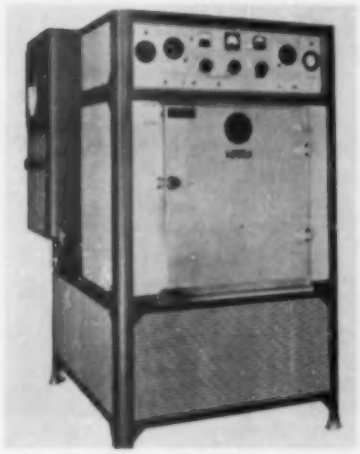
**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

**E-72—Laundering unit** for textiles uses vibration as part of the washing operation. It is designed especially for removing solids such as sizing, clots, and loose dye particles from materials. During the laundering, 3,000 vibrations per minute pass to the fabric through the vibrators (ribbed sheets of rust-proof steel). The unit lessens fiber weakening. A large amount of fabric can come in contact with the ribbed sheets. Gebr. Stork & Co.'s Apparatenfabriek N. V.



**E-73—Fade-Ometer and Weather-ometer** have spectral energy distribution very close to that of natural sunlight. Lamp used is a 6,000-w., water-cooled Xenon. The lamps have an anticipated useful life of 2,000 hours and replaceable burners. Specimen racks have a diameter of 37¾ inches, will take up to 54 specimens 3 x 9 inches in size. Automatic humidity control available during entire cycle. Atlas Electric Devices Co.

## TEXTILE WORLD . . .

# Calendar

### December

**AATT, monthly meeting,** Della Robbia Room, Hotel Manger-Vanderbilt, New York, N. Y., Dec. 7

**National Association of Manufacturers, annual congress of American industry,** Waldorf-Astoria Hotel, New York, N. Y., Dec. 7 to 9

**AATCC, New England Section,** Colonial Country Club, Lynnfield, Mass., Dec. 9

### 1961

### January

**AATCC, Piedmont Section,** Poinsett Hotel, Greenville, S. C., Jan. 21

### February

**Canadian Textile Conference,** Queen Elizabeth Hotel, Montreal, Canada, Feb. 7 to 9

**AATT, annual meeting,** Hotel Commodore, New York, N. Y., Feb. 8

### March

**National Association of Secondary Material Industries, Inc., annual convention,** Fairmont and Mark Hopkins Hotels, San Francisco, Calif., March 11 to 15

**ASME, Textile Engineering Conference,** Clemson College, Clemson, S. C., March 16 & 17

**American Cotton Manufacturers Institute, annual meeting,** Fontainebleau Hotel, Miami Beach, Fla., March 23 to 25

### April

**Alabama Textile Manufacturers Association, 60th-Anniversary Convention,** Buena Vista Hotel, Biloxi, Miss., April 12 to 14

**Narrow Fabrics Institute, Inc., spring meeting,** The Tides Inn, Irvington, Va., April 16 to 18

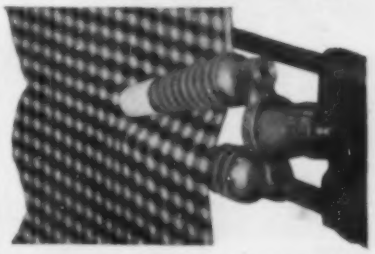
**Georgia Textile Operating Executives, spring meeting,** Hightower Building, Georgia Institute of Technology, Atlanta, Ga., April 23

**Underwater Institute, annual meeting,** Hotel Dennis, Atlantic City, N. J., April 24 & 25

**45th Knitting Arts Exhibition,** Civic Auditorium, Atlantic City, N. J., April 24 to 28

**Georgia Textile Manufacturers Associations, Inc., annual meeting,** Hollywood Beach Hotel, Hollywood, Fla., April 26 to 29


**BANISH "Double-Trouble" with Mount Hope® SELVAGE UNCURLERS**



Mount Hope Selvage Uncurlers eliminate double or turned selvages automatically, save labor — save material. Simple in design, easy to install, they are driven by the cloth itself, require little maintenance. Usable with all fabrics, whatever the type or weight.

If you are having double selvage trouble, Mount Hope Selvage Uncurlers are a "must."

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**MOUNT HOPE MACHINERY COMPANY**
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Plants at Taunton, Mass. and Charlotte, N. C.

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CONTINUOUS-ROLL OPERATION

**KAY ANTI-WRINKLE SLAT EXPANDER**

By guarding your processing line against wrinkling, the Kay Slat Expander:

1. Allows faster, more efficient machine operation
2. Reduces losses through rejection
3. Assures tighter, neater rolls
4. Assures higher-quality printing and closer register

Supplied with wooden slats for use at room temp. and aluminum for use in ovens, to 550°.

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# TEXTILE WORLD . . . News from the Mills

**American Thread Co.,** New York, N. Y., has moved its traffic department from the company's New York offices to its trucking-division headquarters in Bristol, Tenn.

**Belding Hemingway Co., Inc.,** New York, N. Y., and Lily Mills Co., Shelby, N. C., have reached agreement to merge. Lily Mills will operate as a wholly-owned subsidiary of Belding Hemingway.

**Bemis Bag Co.,** St. Louis, Mo., has begun a $1.2-million plant expansion and modernization program including a new plant near Muskegon, Mich. Plant expansions are underway in St. Louis, Mo., Claremont, N. H., Flemington, N. J., and Vancouver, Wash. About half of the total expenditures will be devoted to new papermaking and bag-converting equipment installations at these locations. The company has also bought controlling interest in Air-Formed Products Corp., a manufacturer of blow-molded plastics for industrial containers.

**Bibb Mfg. Co.,** Macon, Ga., has bought most of the machinery and real estate of Macon Textiles. The company plans to use the property for the production of worsted and man-made knitting yarns.

**Collins & Aikman Corp.,** New York, N. Y., has transferred its central purchasing office to the Albemarle, N. C., plant. The only exception to this transfer will be the purchasing department of the Bangor tricot division, which will remain in New York City.

**Deering Milliken Research Center,** Spartanburg, S. C., has added a $60,000 chemical-research pilot plant at its facility on Inter-State Highway 85 in Spartanburg.

**Emple Knitting Mills,** Bangor, Me., is building a 60,000-sq.-ft. plant, which will cost $500,000. Scheduled completion: late this month.

**Grenada Industries,** Grenada, Miss., has announced plans for building an addition which will add 50,000 sq. ft. of floor space. This is its seventh expansion in 23 years.

**Henderson Cotton Mills, Inc.,** Henderson, N. C., has installed new equipment in its North Henderson Mill as part of a $750,000 expansion program.

**Indian Head Mills, Inc.,** New York, N. Y., has announced that its Franklin Process Div. has begun a major expansion and improvement program for its three southern yarn spinning and dyeing plants. The plants are located in Greenville and Fingerville, S. C., and Chattanooga, Tenn. These additions will replace production facilities that will be lost with the closing (within a few months) of the Philadelphia plant.

**Jantzen, Inc.,** Portland, Ore., has begun construction on a 24,000-sq.-ft. addition to Jantzen Southern, Seneca, S. C., which will nearly double the size of this plant.

**Jefferson Mills,** Jefferson, Ga., will increase its plant size and production facilities by 20% beginning the first of next year.

**Kayser-Roth Hosiery Co., Inc.,** New York, N. Y., has completed the conversion of its plant in Clarksdale, Miss., to lingerie manufacturing.

**Reeves Brothers Inc.,** New York, N. Y., has leased 113,000 square feet in a mill at Cornelius, N. C., from Samuel Hird & Sons, Garfield, N. J. The space will be used for manufacturing Curon, a process that Reeves bought from Curtiss-Wright.

**Spartan Mills,** Spartanburg, S. C., has completed installation of 66 Draper X-P, 54-in. looms at its Beaumont plant. At its Startex Div., Startex, S. C., 168 looms in the print-weaving department have been converted from 40 to 50 inches, and a new air-change system has been installed on the ground-floor section of the bleachery.

**Spinners Processing Co.,** Spindale, N. C., has begun construction on an 80 x 100-ft. wing, which will house warping machinery.

**Springs Cotton Mills,** Lancaster, S. C., has placed an order for $400,000 worth of new Arrow spinning frames with the Roberts Co., Sanford, N. C. The company will install these 34 Arrow M-1 cotton spinning frames (12,000 spindles) at its new plant addition at Fort Mill, S. C.

**Triangle Knitting Mills,** Philadelphia, Pa., has leased 40,000 square feet in the former National Biscuit Co. plant to expand its production facilities.

**Vuncannon Hosiery Mills, Inc.,** Asheboro, N. C., has announced a $1¼-million expansion program for the manufacture of seamless hosiery. The installation includes 60 seamless machines.

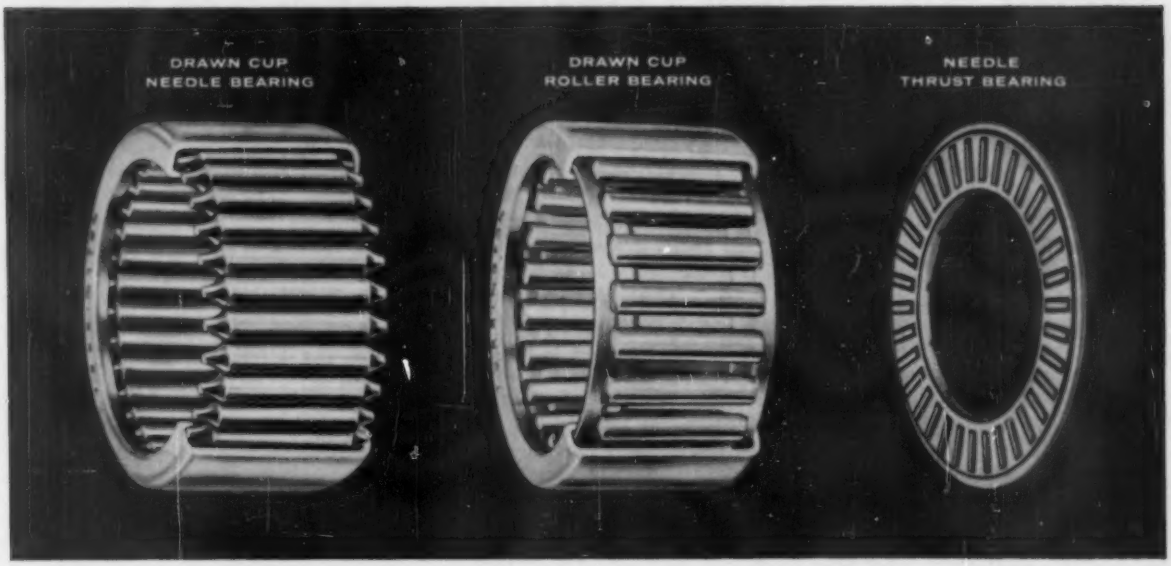
**Wabasso Cotton Co. Ltd.,** Three Rivers, Quebec, Canada, has installed a Ludell system (handles 10,000 imperial gallons each hour) to reclaim the heat from the waste discharge of its bleach house. This unit will relieve the boiler plant of about 10,000 pounds of steam per hour, and will save several thousand dollars a year.

**Wayne Knitting Mills,** Fort Wayne, Ind., will relocate its general offices and shipping in Humboldt, Tenn. The move is scheduled for next month. Construction has begun for a 20,000-sq.-ft. addition to the Humboldt plant at an estimated cost of $100,000.

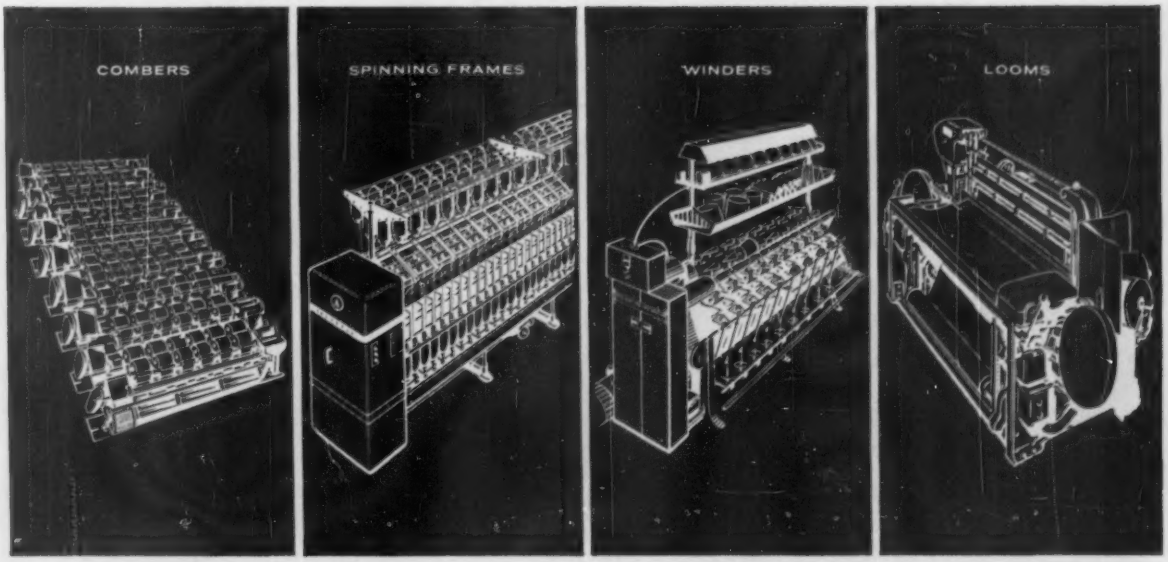
**West Point Mfg. Co.,** West Point, Ga., is moving every piece of production equipment at its Shawmut Mill, Shawmut, Ala., to make way for the new fine goods division. Some of the machinery is being moved to the Newnan Mill Div. in Newnan, Ga., where the tufting yarn is made for Cabin Crafts, Inc., at Dalton, Ga.

**Yorkshire Worsted Mills,** Lenni, Pa., has announced it will move all its weaving operations from Lenni to Woonsocket, R. I., in a consolidation move, which will mean a 75% increase in the firm's Woonsocket operations.

# TORRINGTON NEEDLE BEARINGS




# IN TEXTILE MACHINERY

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# TEXTILE WORLD . . . New Literature

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

## TEXTILE MACHINERY & AUXILIARY EQUIPMENT

**L-1—The Creslan Primer** is a colorful, 16-p. booklet, which introduces consumers to acrylic fiber. Lists characteristics, diagrams, chemical process for making fiber. Includes a primer for all natural, man-made fibers. American Cyanamid Co.

**L-2—Knit-outerwear machinery** is described in full-color, 8-p. brochure. Recommends machines for men's and women's sweaters, swimsuits, and shirts. Pictures show correct stitches and seam. Union Special Machine Co.

**L-3—Textile-printing color** preparation is the subject of 10-p. technical bulletin. Describes materials, formulations, and processing procedures for both water-in-oil and oil-in-water systems of preparation. Morehouse-Cowles, Inc.

**L-4 — Steel-strapping** procedures and equipment are presented in 40-p., 4x9 manual. Includes charts for proper selection of equipment, pictures of all tools. On-the-job photographs show applications. Signode Steel Strapping Co.

**L-5 — Data-processing** reference book categorizes applications of equipment to letter writing, production scheduling, purchase orders, sales orders, check writing, production orders, invoicing—28 pages with pictures. Friden, Inc.

**L-6—Heat-transfer and process equipment** is listed in 4-p. leaflet. Describes heaters, hot-water converters, brine coolers, vapor condensers, heat exchangers, and pressure vessels with photographs of each. Niagara Weldments, Inc.

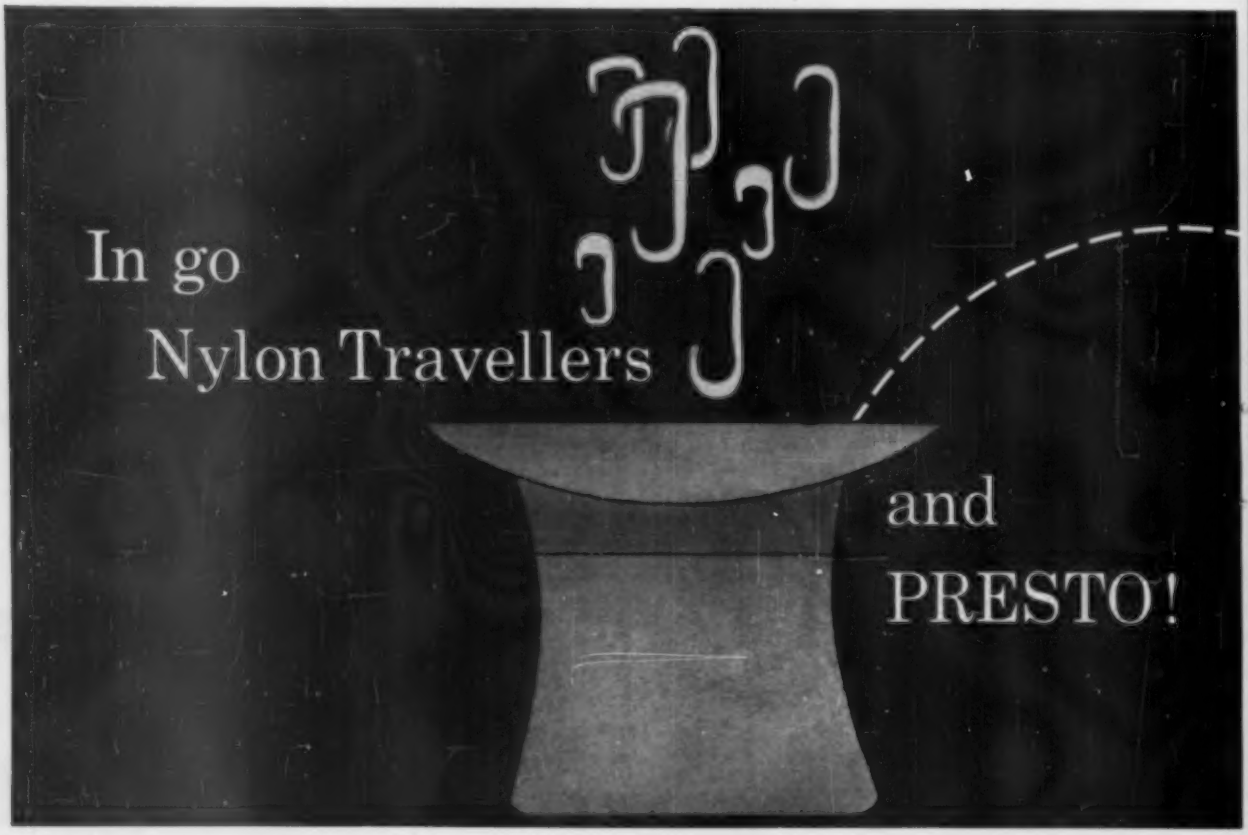
**L-7—Metalworking equipment** is presented in 8-p. foldout. Pictures, specification charts, and price list give complete information on line of drills, lathes, and auxiliary equipment. Dealers listed. South Bend Lathe, Inc.

## CHEMICALS & SUPPLIES

**L-8—Bleaching** information is contained in two 4-p. folders. One gives popular question and answers on bleaching. Second contains comparative chart of bleach performance and instructions for group demonstrations. Purex Corp Ltd.

**L-9—Oils, aromatic chemicals, and colors** are listed in 36-p. price list. Booklet contains short descriptions of hundreds of products along with most common uses and prices for minimum quantities. Dodge & Olcott, Inc.

**L-10—Latex** and its uses are listed in 12-p., pocket-size technical bulle-



tin. Describes six families of latex with particular emphasis on their applicability to the textile industry. Plastic Sales Department, Dow Chemical Co.

**L-11—Surface active agents,** both cationic and nonionic, are presented in 4-p. folder with charts listing physical characteristics. Uses are shown for agents ranging from fatty nitrogen derivatives to polyether alcohols. Nalco Chemical Co.

**L-12—Emulsification of polyethylene resins** is the subject of a 12-p. technical-data report. Drawing and pictures illustrate procedures. Uses of emulsions in textile industry are described. Eastman Chemical Products, Inc.

**L-13—Organic Chlorine Compounds,** a 44-p. guide, lists uses of chemicals as solvents, extractants, fumigants, intermediates, and special-purpose fluids, particularly for textiles. Charts show physical properties and characteristics. Union Carbide Chemicals Co.

## ENGINEERING

**L-14 — Thermocouple Selector Switches,** a 4-p. catalog, contains diagrams, drawing, photographs, descriptions of equipment. Lists detailed information of key, rotary, and pushbutton types, with casing requirements. Thermo Electric Co.

**L-15—Centrifugally cast irons** and their engineering properties are described in 8-p. brochure, well-illustrated with photographs. Charts summarize mechanical, physical properties and chemical composition. Shenango Furnace Co.

**L-16—Control centers** are presented with full-color photographs in new foldout, GED-4152. Photographs point out new features of the grouped motor control center emphasizing protective devices and adaptability. General Electric Co.

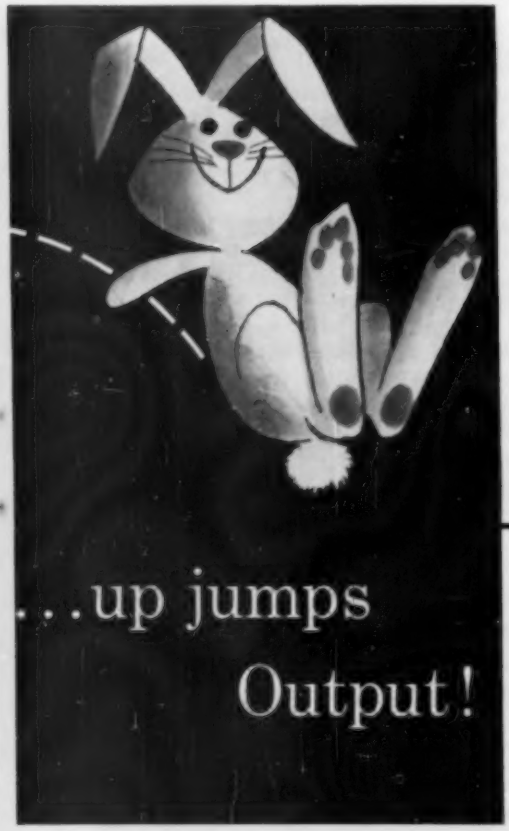
**L-17—Wire mesh filters'** characteristics are listed on 22 separate data sheets, punched for a loose-leaf notebook. Include temperature ranges, working pressures, pressure drop and particle removal ratings. Aircraft Porous Media, Inc.

**L-18—High-temperature tubing and pipe** are detailed in 6-p. foldout. Large chart contains information on tensile properties, thermal conductivity and expansion, creep strength, and oxidation resistance. Babcock & Wilcox Co.

**L-19—Heating and cooling equipment** panels are presented in two data sheets. Pictures illustrate 27 varieties of panels, each accompanied by a descriptive paragraph. Suggests uses for many shapes. Dean Products, Inc.

**L-20—Electric hoists** are described in 4-p. bulletin, illustrated with photographs and cut-away drawings. Charts list capacities, horsepower, and hoist speeds of alternate models. Detailed explanation of mechanism. Harnischfeger Corp.

**L-21—Pneumatic actuators** for control of valves, proportioning pumps,


*Magic?* No. But you *will* be amazed at the increase in your twisting room output when you put in Coats & Clark's Nylon Travellers.

The explanation: 20 years of experience in the design, engineering, application, and production of the Nylon Traveller—originally developed in Coats & Clark mills.

The result: Nylon Travellers that reduce staining, increase efficiency, improve twisting room performance, increase speed and quality—and cut costs.

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*Name*_____

*Mill Name*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

## NEW LITERATURE

. . . *Begins on page* 152

**For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.**

drives, flow regulators, rheostats, autotransformers are presented on 2-p. sheet, with pictures. Includes data chart and description of operation. Conoflow Corp.

**L-22—Bulbs, Tubing, and Fittings** for Filled System Thermometers, a 12-p. specification sheet, gives data on size, length, materials of equipment for gas, mercury, and vapor actuated thermal systems. Diagrams. Minneapolis-Honeywell Regulator.

### INSTRUMENTS & TESTERS

**L-23—Yarn inspector,** primarily for man-made fibers, is described and pictured in 4-p. brochure, along with three control units. Discusses special features and alternate models. Lists auxiliary equipment. Foster Machine Co.

**L-24—Tachometers** of continuous, indicating, portable, and fixed types are listed in 12-p. digest. Describes uses for speed measurement, production and quality control. Contains diagrams and photographs. Jones Motrola Corp.

**L-25—Temperature controls** are pictured, described and diagrammed in 8-p. brochure. Emphasizes wide choice of optional features available to meet specific problems. Gives specifications for each model. Fenwal, Inc.

**L-26—Spectrophotometer accessories** are listed in handsome 14-p. booklet. Photographs show equipment and diagrams present applications. Gives ordering instructions. Scientific & Process Instruments Div., Beckman Instruments, Inc.

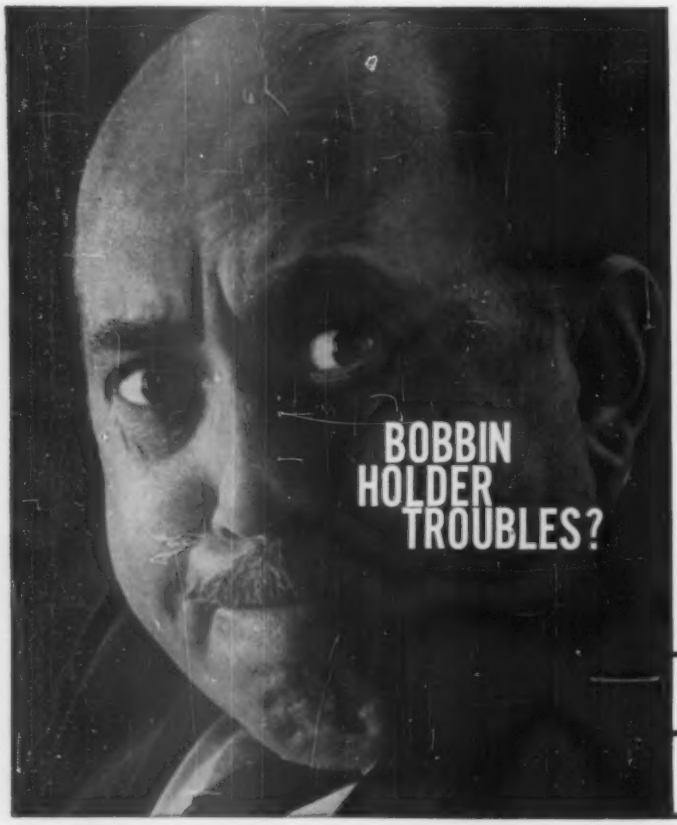
**L-27—Hand tachometer,** with special-purpose accessories, is announced in 4-p. bulletin. Pictures show instrument in use in industry, including textiles. Describes features and gives specifications. Metron Instrument Co.

**L-28—Receiver gages** with dial indicators are shown in 8-p. catalog. Includes diagrams for each model and information on materials, dials, ranges, case styles and sizes. Liberally illustrated with photographs. United States Gauge.

### MATERIALS HANDLING

**L-29—Hand-operated stacker** is presented in 6-p. foldout with pictures. Drawings illustrate many uses. Engineering drawings and chart give specifications. Describes optional equipment and accessories. Lewis-Shepard Products, Inc.

**L-30—Interfloor conveyor belts** are pictured in 6-p. folder. Sketches show typical installations and photographs show conveyors in place in


Bobbins falling off the creel? Yarn stretching and breaking because of inferior bearings? Limited to one size bobbin? Labor costs increasing due to excess creeling time?

Bendix offers *quality* bobbin holders that correct all these troubles. Both the Bendix® Spin Master (toggle) and Eclipse (spring) type bobbin holders are now offered with various bolt dimensions and thread sizes *that are interchangeable with your present installation*. Production losses can be kept to a minimum during change-over.

If you need or plan a replacement program, be sure this time to specify Bendix. The final cost is less.

Bendix-Elmira

Eclipse Machine Division—Elmira, New York

The Bendix Corporation

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Export Sales: Bendix International 205 E. 42nd St., New York 17, N.Y.

Greenville Textile Supply Co., Greenville, S. C. South Carolina • Georgia Alabama • Tennessee

FURNISHED AS ORIGINAL EQUIPMENT BY LEADING TEXTILE MACHINE MANUFACTURERS

plants. Gives specifications for two alternate models. Rapids-Standard Co., Inc.

**L-31 — Materials-handling equipment line** is presented in comprehensive 4-p. digest. Lists pulverizers, sifters, pumps, blowers, mixers, knife cutters, attrition and hammer mills, and saw-tooth crushers. Young Machinery Co., Inc.

**L-32—Case history of materials-handling situation** is related in 6-p. pamphlet. Describes how a manufacturer applied materials-handling equipment of many types of his receiving, production and shipping. Lewis-Shepard Products, Inc.

## GENERAL

**L-33—Electric car** designed for one-man operation in manufacturing plants is introduced in catalog sheet. Gives specifications of car, describes working of high-power battery. Suggests applications in factories. Birdie Co., Inc.

**L-34—Jet cleaner's** installation, operation and maintenance are discussed in 4-p. bulletin. Photograph shows a typical installed unit. Describes application to all cleaning problems for walls, floors, machinery. Sellers Injector Corp.

**L-35—**Switches for all purposes are catalogued in 4-p. bulletin with a photograph of each model. Includes sections on limit, explosion-proof, basic, pushbutton, mercury and toggle switches. Micro Switch Div. Minneapolis-Honeywell Co.

**L-36—Storage tanks and heating elements** are listed in 8-p. catalog with an abundance of specification charts and selection tables. Includes engineering diagrams and photographs of alternate linings available. Sims Co.

**L-37—Dry-chemical feeders** are described in two technical data sheets with photographs and engineering drawings. Describes operations of equipment and lists specifications. Presents the unusual features of the feeders. Permutit Co.

**L-38 — Power-transmission** equipment catalog discusses variable-speed drives, conventional V-belt and Ultra-V-belt drives, timing belt drives, and flat belt pulleys. Pillow blocks and bushings are described. T. B. Wood's Sons Co.

**L-39—Adjustable-speed drives** are described in 16-p. booklet well illustrated with pictures, drawings and charts. Discusses operation, configurations and features, and mounting positions. Includes rating tables. General Electric Co.

**L-40—Seamless Welding Fittings & Flanges** describes connections made of carbon, alloy, and stainless steel in 8-p. catalog. Includes specification charts and pictures of many models. Drawings show tolerances. Babcock & Wilcox Co.

**L-41—High-speed and flywheel cushion couplings** are introduced in 20-p. announcement with complete engineering data, photographs, dimension drawings, and selection tables. Shows actual installations. Dodge Mfg. Corp.


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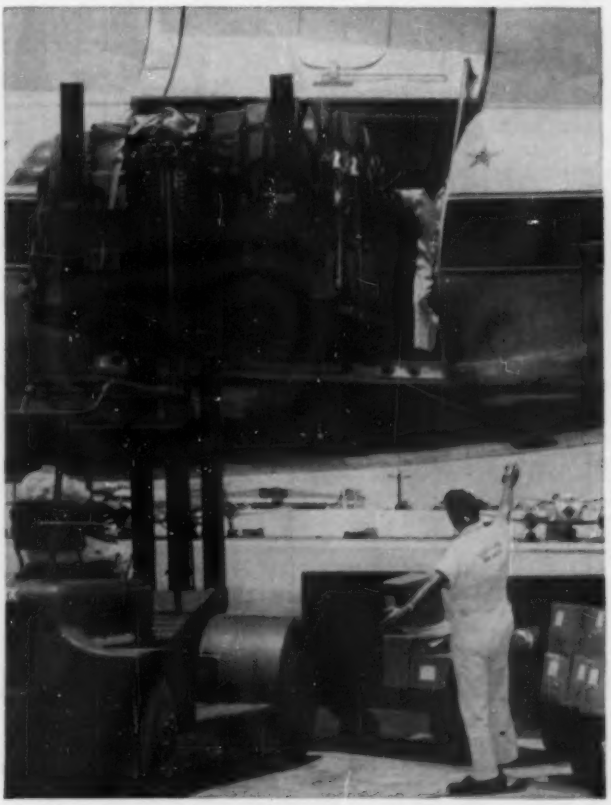


# TEXTILE WORLD . . . Advertisers' Literature

To get items you want offered in the advertisements in this issue, just circle numbers on Reader-Service Card next to back cover. If all bulletins listed under one number are not required, please write on card the name of bulletin desired.

**A350—Screen Printer.** Write for illustrated catalog and fabric samples. Edward S. Rudnick

**A351—Latex for Coating.** Technical bulletin lists applications and types of latices available. Goodyear Chemical Div.

**A352—Slasher Rolls.** Case histories are detailed in the S-W Sealskin brochure. Stowe-Woodward, Inc.

**A353 — Factoring.** Information booklet is available on request. Walter E. Heller & Co.

**A354—V-Belt Drives.** Send for new manual that describes these drives. Dodge Mfg. Co.

**A355—Package Dyeing.** Bulletin describes machine details. Turbo Machine Co.

**A356—Fabric Testers.** Technical bulletins lists details for Atlas-Ometers. Atlas Electric Device Co.

**A357—Flat Belts.** Literature tells about nylon-core leather belts. J. E. Rhoads Sons.

**A358—Containers.** A folder, available for the asking, describes full line of products. National Vulcanized Fibre Co.

**A359—Fugitive Tints.** Write and get your test kit. Borne Chemical Co., Inc.

**A360—Motor Burn-Out Protection.** Bulletin SP-25 fully describes Klixon protectors. Texas Instruments Inc.

**A361—Strapping.** Ask for Technical Bulletin No. 4. American Viscose Corp.

**A362—Textile Tester.** The CRE manual tells about the complete versatility of this new pushbutton instrument. Scott Testers, Inc.

**A363—Slat Expander.** Data sheet can be yours by request. Kay Machine Co., Inc.

**A364—Top-Roll Cleaner.** Write for the literature that describes this product. M. B. Products

**A365—Fabric Guide.** A free catalog is available on these air guides. Guider Specialty Co.

**A366—Rotary Joint.** Send for the new catalog No. 310, which gives complete data on this product. Barco Mfg. Co.

**A367—Pneumatic Strapper.** Send for Idea No. S5-17, which describes installations and examples. Acme Steel Co.

**A368—Nylon Traveler.** Catalog listing types available on request. Coats & Clark Inc.


## FLUIDICS* AT WORK

### Selecting water treatment systems to meet your specific needs

Many factors are involved in proper selection of water treatment equipment for specific use. Analysis of the raw water, volume and quality of water required, cost of equipment (both initial and operating), amortization rates and plans for future expansion, to cite just a few. The systems illustrated typify answers to widely varying requirements.

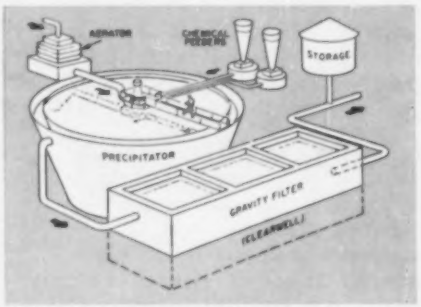
If you are concerned with any phase of water conditioning, bring an outline of your requirements to Permutit. As the largest and most experienced producer of water treatment equipment of every type, Permutit can assure you sound recommendations and the most efficient and economical system available for your particular need.

Write to the Permutit Division, Dept. TW-120, 50 West 44th Street, New York 36, New York . . . or Permutit Company of Canada Ltd., 207 Queen's Quay West, Toronto 1, Ontario; or 207 West Hastings Street, Vancouver 3, B. C.

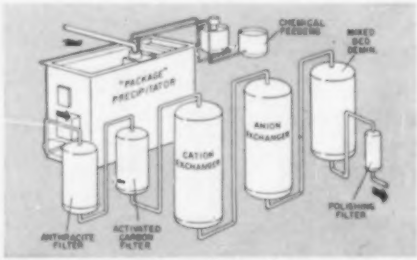
*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

**PFAUDLER PERMUTIT INC.**

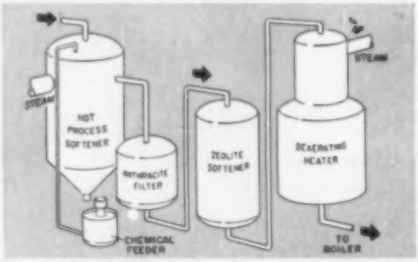
Specialists in FLUIDICS . . . the science of fluid processes



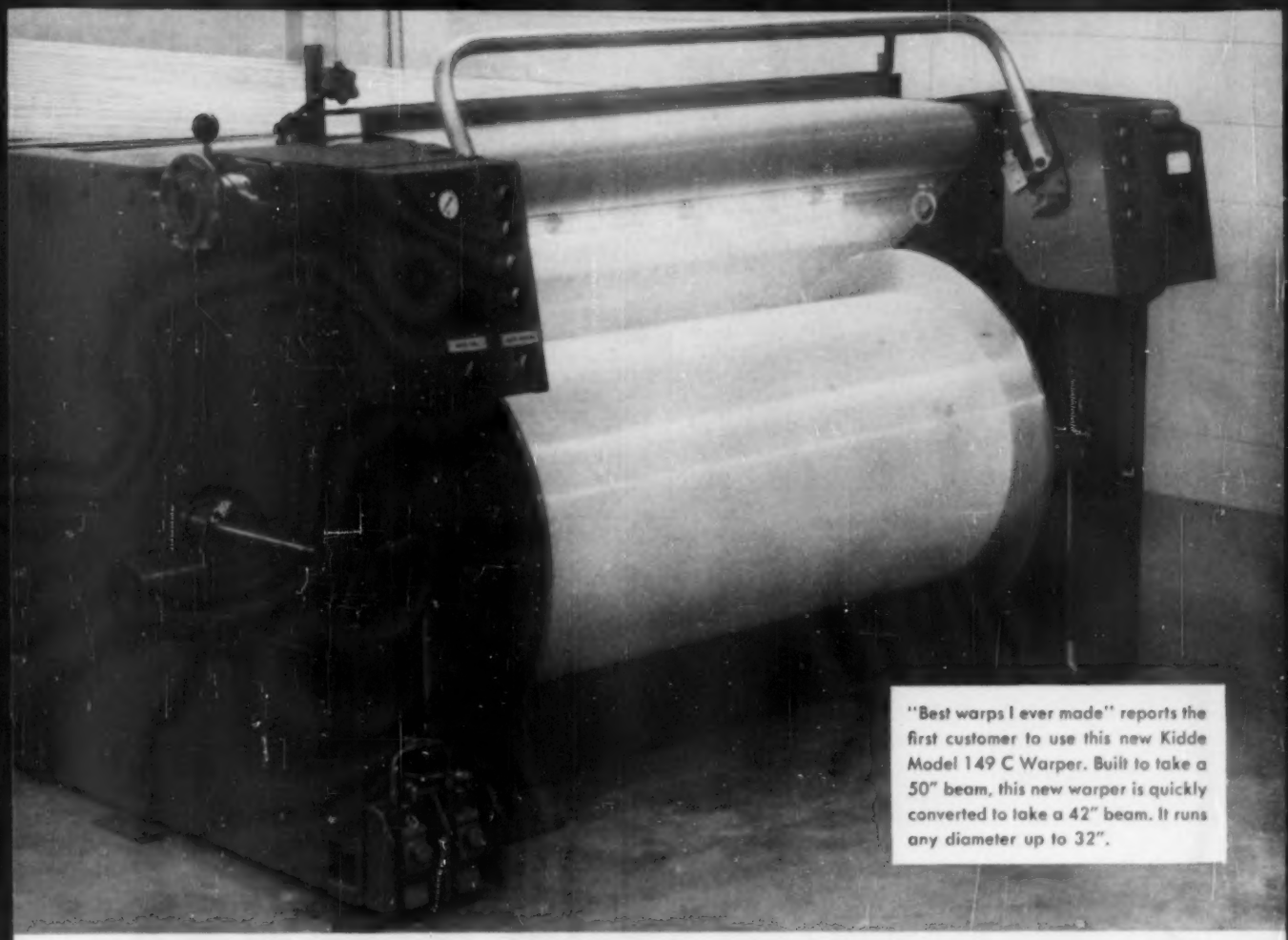

**Well water for municipal supply.** Aerator reduces $CO_2$ to reduce acidity, reduces taste and odor and oxidizes dissolved iron and manganese. Precipitator removes turbidity, color, hardness and oxidized iron and manganese. Gravity filters remove remaining traces of turbidity.




**Process water for electronic components.** Package Precipitator removes bulk of turbidity, hardness and iron. Anthracite filter removes remaining suspended matter. Activated carbon filter takes out color and absorbs dissolved organics. Demineralizer—cation, anion, and mixed bed—reduces dissolved solids to guaranteed maximum. Polishing filter removes traces of suspended matter.




**Water for steam boiler.** Hot process softener reduces hardness to a few grains per gallon. Also reduces silica. Anthracite filter removes remaining turbidity. Zeolite softener may be added to system where zero hardness is needed. Finally, the deaerating heater removes oxygen to prevent corrosion.



"Best warps I ever made" reports the first customer to use this new Kidde Model 149 C Warper. Built to take a 50" beam, this new warper is quickly converted to take a 42" beam. It runs any diameter up to 32".

# Every KIDDE WARPER gives you the smoothest, most even warp beams in the business

Kidde warpers are *engineered* to give you smoothness and evenness in yarn buildup that's unmatched by any other machines you can buy. Here are a couple of reasons why:

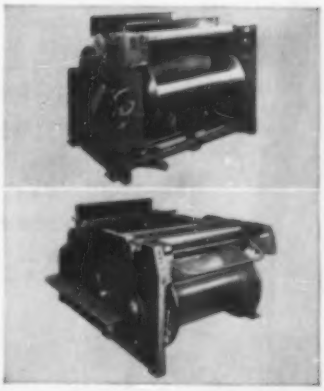
Instead of just one cylinder on the compression roller, Kidde gives you *two* – hydraulically operated – one on either end of the roller, for perfectly balanced pressure that eliminates bounce and chatter. And powerful brakes stop the beam within one revolution and automatically adjust themselves. What's more, the brakes on the measuring roll, compression roller and beam are electronically synchronized so yarn is never scuffed.

When used with a Kidde accumulator, both warper and accumulator are electrically synchronized. This maintains even tension when yarn must be backed off to pick up a lost end.

These are only a few major advantages of Kidde warpers. Get the full story of their trouble-free operation by contacting:

This Kidde warper handles beams up to 21" in diameter, made in three sizes: 21, 42 or 50 inches long. Every part is easily accessible. Regardless of size, any Kidde warper can be doffed automatically – even by a girl. Hydraulics do the work, at the touch of a lever.

Kidde high speed cotton system warper handles 54" section beams with flange diameters up to 36". Has all the quality features of other Kidde warpers with speeds up to 1,000 YPM.



TRICOT AND RASCHEL MACHINES • TRICOT WARPERS • HORIZONTAL WARPERS • BEAMERS
CREELS • SLASHERS • WINDER-REDRAWS • TENSOMETERS • TENSION COMPENSATORS

**Kidde**

TEXTILE MACHINERY CORPORATION — BLOOMFIELD, NEW JERSEY

*The word KIDDE is the trademark of Walter Kidde & Company, Inc., and its affiliated companies.*

let's talk about...

VIDOL SOAP FLAKES

Vidol Flake Soap is the low titre member of the Laurel *quality* soap family. It is produced from the finest grade of distilled red oil (Oleic Acid), and tests approximately 12° C titre. Like all other Laurel products, it is made under conditions of rigid laboratory control which assure uniformity from lot to lot and trouble-free mill operations.

Vidol Flake Soap is used in a variety of applications, including boiling off, scouring, soaping off, dye leveling and stripping, and wool fulling. It is easily dissolved and, being of low titre, is free rinsing at low temperatures. It may be used successfully on cotton, wool, silk, nylon, Orlon, Dynel, Acrilan, Dacron, Vicara, rayon, acetate, etc. The results are excellent.

If you are looking for a high quality, low titre flake soap, we strongly urge you to investigate the plus values offered by Laurel VIDOL Flake Soap. We will be happy to send you a generous sample for your own use and testing.

Laurel Brand — OVER 50 YEARS OF SERVICE TO INDUSTRY

Laurel

SOAP MANUFACTURING CO., INC.

TIOGA, THOMPSON & ALMOND STS. • PHILA. 34, PA.

Warehouses: Paterson, N.J. Chattanooga, Tenn. Charlotte, N.C. Greenville, S.C.

# TEXTILE WORLD . . .

## News About Suppliers

**ALLIS-CHALMERS MFG. CO.,** Milwaukee, Wisc.—Has consolidated the West Allis centrifugal pump department and the compressor department under the management of E. F. Greiwe. C. F. Codrington and H. L. Ross have been named sales manager and manager of engineering respectively of the new department. . . . **AMERICAN CYANAMID CO., FIBERS DIV.,** New York, N. Y.—Has appointed James N. McDonald sales manager. . . . **AMERICAN ENKA CORP.,** New York, N. Y.—Has announced the appointment of A. A. J. Kramers as manager of the textile-research department. John F. Tutt has been named development specialist for industrial applications in the marketing technical department. . . . **AMERICAN VISCOSE CORP.,** Philadelphia, Pa.—Has named David S. Collingwood sales representative in Boston for its Industrial Packaging Dept. Harry G. Alwine has been promoted to the position of special representative for the Atlanta, Ga., district sales office. In this new capacity he will supervise field sales activities in the eleven southeastern states included in the Atlantic district. . . . **AVISUN CORP.,** Philadelphia, Pa., equally-owned affiliate of American Viscose Corp. and Sun Oil Co., has moved its executive offices to Philadelphia National Bank Building, Broad and Chestnut Sts.

**FRANCIS B. DE LOACH (left) has been promoted to assistant sales manager, Sizing Div., Seydel-Woolley & Co., Atlanta, Ga. DR. HOWARD J. PHILIPP (center) has been named to the newly established position of vice president in charge of planning, Celanese Corp. of America, New York, N. Y. DAVID G. ASTON (right) has been appointed to the Caprolan-nylon merchandising staff of the National Aniline Div., Allied Chemical Corp., New York, N. Y.**

**ATLANTIC STEEL CO.,** Atlanta, Ga.—Has opened a branch steel-service center in Greenville, S. C. W. P. Cole has been named branch manager and A. J. Vaccaro will serve as his assistant. . . . **BAXTER CORP.,** Shelby, N. C.—Has moved all its operating facilities for the jacquard industry into its new Shelby, N. C., plant. The company had formerly occupied a 13,000-sq.-ft. building in Grover, N. C. The new building contains 33,000 square feet of floor space and is on five acres of ground, with rail siding. . . . **BERKSHIRE COLOR & CHEMICAL CO.,** Clifton, N. J.—Has moved its executive offices from Clifton to Passaic, N. J. . . . **BIRCH BROTHERS, INC.,** Somerville, Mass.—Has bought the patents and all rights to manufacture and sell the Bachmann Uxbridge automatic tacking aligner from Bachmann Uxbridge Worsted Co. . . . **CHEMSTRAND CORP.,** Decatur, Ala.—Has promoted R. E. Smith to general manager of marketing. Lamar Beach has been named manager of the district sales office at Charlotte, N. C. The company has transferred R. J. Wojtowicz, technical sales service specialist, from Needham, Mass., to the New York sales office.

**COLTON CHEMICAL CO.,** Cleveland, Ohio—Has transferred Edward Rauh, sales representative from the Ohio, Michigan, Indiana territory to the Los Angeles office. . . . **CONTINENTAL-DIAMOND FIBRE CORP.,** Newark, Del.—Has transferred C. A. Trusk, sales representative, from Boston to the company's New York district. J. F. Rushmore has been appointed manager of sales administration of the com-

. . . *Turn to page* 160

### FEATURES OF THE NEW "DW" WARPER

**CAPACITY.** The "DW" Super-Speed Warper will wind beams up to 40" head diameter. All types of beams up to this size can be accommodated.

**LET-OFF MECHANISM.** In order to insure uniform pressure on the driving drum as the beam builds up, a new let-off mechanism has been developed. This permits extremely accurate automatic gaging and maintenance of pressure, and consequent uniformity of the beam.

**DOFFING.** A power-operated built-in doffing mechanism helps to reduce down time to a minimum and saves effort substantially. Sturdy arms, which support the beam, pivot outward to set the beam on floor or truck as desired.

## PUT A NEW "DW" WARPER

### IN FRONT OF YOUR PRESENT

## "VC" CREEL

It is perfectly possible to do this, and the added advantages of lower cost and greater productivity can make the investment a profitable one. Gains come in several ways — larger beams can be wound, the beams are of greater uniformity throughout, and doffing is much easier. The new "DW" Super-Speed Warper is a little deeper from front to back, since the driving drum, clutch, brake, and motor are now arranged back of, rather than underneath, the beam. With this re-arrangement, valuable improvements have been made in many important elements of the drive and controls. We suggest you discuss the possibilities for *your* mill with your Barber-Colman representative at the next opportunity.

**AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES**

**BARBER-COLMAN COMPANY**

ROCKFORD • ILLINOIS • U.S.A.

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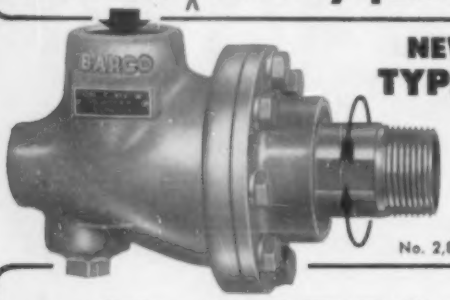
|---|---|---|---|---|---|
| Batliboi & Company<br>Forbes Street, Fort<br>Bombay, India | J. Rahaim<br>Isabel la Catolica 45 913<br>Apartado 7348<br>Mexico D.F., Mexico | Industria e Comercio de Maquinas S. A.<br>Avenida Rio Branco No. 50, Rooms 1201 / 3<br>P. O. Box No. 63<br>Rio de Janeiro, Brazil | Do-Yen Shoji Kabushiki Kaisha<br>Atlas Building (7th Floor)<br>11, Bingo-machi, 3-chome,<br>Higashi-ku,<br>Osaka, Japan | Associated Agencies (Mfrs.) Ltd.<br>Piccadilly House<br>11 Piccadilly<br>Manchester 1, England | Associated Agencies (Mfrs.) Ltd.<br>27 Kothari Building<br>Napier Road<br>Karachi 2, Pakistan |

Need a Better rotary joint?




NEW TYPE C

Patent No. 2,836,439

-it's BARCO!

For countless applications, Barco's new Type C Rotary Joint will give you the best operating records you've ever had—*and for LESS COST!*

**RESISTS SEAL RING BREAKAGE**—The spherical seal ring is under compression, not *tension*, loading. Self-adjusting for wear. Seal withstands shock loads and alternating hot and cold service.

**WIDE SPACED BEARINGS**—Two, instead of one . . . increased bearing area. No lubrication required. Lowest friction.

**MULTI-USE**—One basic style for all services, single flow or syphon flow, quick availability from LOCAL STOCKS.

**200 P. S. I. STEAM RATING**—Heavy duty service at *no extra cost.* Eight sizes, ½" to 3". *Send for new Catalog 310 today.* **BARCO MANUFACTURING CO.,** 534N Hough Street, Barrington, Illinois.

CIRCLE 254 ON READER SERVICE CARD

pany. . . . **CROMPTON & KNOWLES CORP.,** New York, N. Y.—Announced the merger of F. B. Redington Co. into the package-machinery division of the company. . . . **EASTMAN CHEMICAL PRODUCTS, INC., Division of Eastman Kodak Co.,** New York, N. Y.—Has reassigned J. W. Malloy, Jr., formerly assistant sales manager for Verel fibers, to the Kodel-fiber sales group in the same executive capacity. G. W. Snyder has been named assistant sales manager for filter products. J. C. McNamee has been appointed fiber-sales representative in the New York office of the company. . . . **EMKAY CHEMICAL CO.,** Elizabeth, N. J.—Has made four administrative changes in the company's sales department. Warren Harrington has been named technical sales representative for North and South Carolina. T. J. McDonald has been appointed sales manager in the New England area. D. L. Armitt, formerly laboratory technician, has joined the sales staff of the Industrial Div.

J. CLYDE KELLY (left) has been appointed Southern sales manager for Fletcher Industries, Cheltenham, Pa. ARNOLD V. STOCKEY (center) formerly field-sales manager, has been named general sales manager of Nutting Truck & Caster Co., Faribault, Minn. EDWARD CRANSHAW (right) has been appointed sales manager of Dixon Corp., Bristol, R. I.

**FOOD MACHINERY & CHEMICAL CORP.,** New York, N. Y.—Has transferred R. D. Brassil, technical service representative to the textile industry, to its headquarters in Charlotte, N. C. . . . **GENERAL ANILINE & FILM CORP.,** New York, N. Y.—Has elected E. J. Williams and H. G. Shelton vice presidents of the corporation at its board of directors meeting. Appointments have been made in conjunction with the new re-organization program. Named to new positions are: Dr. C. C. Schulze to head the Antara Chemicals Div.; J. W. Conlon, the General Dyestuff Div.; and R. J. O'Brien, the Collway Pigments Div. . . . **GENERAL ELECTRIC CO.,** Waterford, New York—Has made three changes in its Silicone Products Dept. L. D. Stoddard has been named sales representative for the East-Central district, J. S. J. Berray is now sales representative for the Eastern district, and R. L. Daileader is sales representative with his office in Bridgeport, Conn.

**GOODYEAR TIRE & RUBBER CO.,** Akron, Ohio—Has appointed H. A. Captein senior sales representative for the San Francisco field office. . . . **HEYDEN NEWPORT CHEMICAL CORP.,** New York, N. Y.—Has appointed R. M. Szymanski manager of the Bay Minette, Ala., plant of Newport Industries Co., a division of the corporation. . . . **KOPPERS CO., INC.,** Pittsburgh, Pa.—Has named W. L. Bossart export-sales manager in the International Div. of the company. In his new capacity he will manage overseas distribution of products supplied by Koppers' six manufacturing divisions. . . . **LEESONA CORP.,** Providence, R. I.—Has appointed L. R. Alexander technical liaison manager of its Patterson Moos Research Div. . . . **MINNEAPOLIS-HONEYWELL REGULATOR CO.,** Minneapolis, Minn.—Has made three administrative changes in the Micro Switch Div., J. L. Lincoln has been named Eastern sales manager, K. J. Cumming has been promoted to sales manager of the Marion Instrument Div., and R. F. Johnson succeeds Mr. Cumming as central-area (Cleveland) sales manager. . . . **MONSANTO CHEMICAL**

**CO.**, St. Louis, Mo.—Have begun negotiations for the acquisition of American Viscose Corp.'s 50% interest in the Chemstrand Corp. American Viscose's interest is estimated to amount to $9½-million at the time the plan is to be consummated.

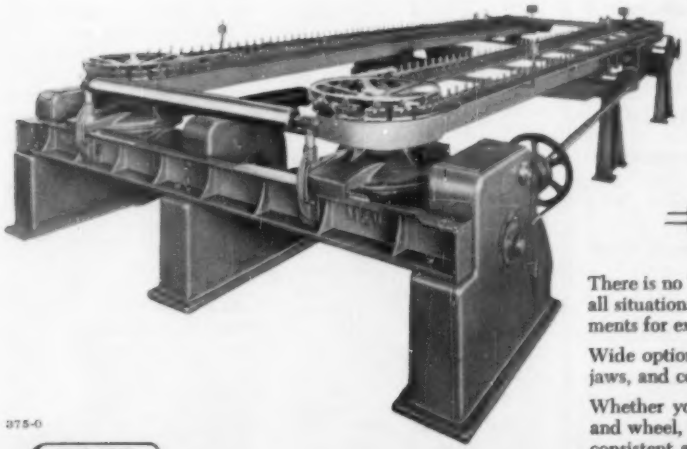
**MORNINGSTAR-PAISLEY, INC.**, New York, N. Y.—Has appointed E. P. Lavoie Southern textile service manager with headquarters in Charlotte, N. C. . . . **NOPCO CHEMICAL CO.**, Newark, N. J.—Has announced that Ralph Wechsler has retired as chairman of the board after almost 40-years service. . . . **PENNSALT CHEMICALS CORP.**, Philadelphia, Pa.—Has appointed R. O. Rowe and C. R. Geiser product manager and manager of product development respectively of the Industrial Chemicals Div. . . . **PHILLIPS PETROLEUM CO.**, Bartlesville, Okla.—Has announced plans for the construction of a plant to produce high-purity benzene (22-million gallons per year capacity) at its Sweeny refinery south of Houston, Tex. Benzene shipments will begin mid-1961. . . . **RADIO CORPORATION OF AMERICA**, New York, N. Y.—Has formally opened its Electronic Data Processing Center in the Morton Salt Building in Chicago.

**RIGGS & LOMBARD, INC.**, Lowell, Mass.—Has announced the retirement of P. A. Merrimam, sales engineer, after 25 years service. . . . **SACO-LOWELL SHOPS**, Boston, Mass.—Has elected W. F. Lowell president. Formerly senior vice president, he succeeds T. J. Ault who resigned last July. J. P. W. Davidson has been elected vice president. . . . **SCHMIDT MFG. CO.**, New Bedford, Mass.—Has named R. J. Overcash to head sales in the North Carolina, Virginia area. . . . **SINGER MFG. CO.**, New Work, N. Y.—Has elected L. C. Marsac president and chief executive officer of Diehl Mfg Co., a wholly-owned subsidiary of Singer. Singer-Fidelity, Inc., has announced plans for the addition of a new building resulting in a 40% expansion of manufacturing capabilities. . . . **SOABAR CO.**, Philadelphia, Pa.—Has begun work on a new plant to be situated in Philadelphia. The company will move its entire plant and office operations in

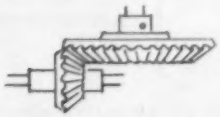
CHARLES E. ZAHOS (left) has been appointed field sales and service representative in North and South Carolina for the Markem Machine Co., Keene, N. H. RODNEY C. SOUTHWORTH (center) has been named acting director of research of Draper Corp., Hopedale, Mass., to fill the vacancy caused by the death of Frederick M. FitzGerald. C. ROGER BRUSSEE (right) has been appointed manager of marketing services of Whitin Machine Works, Whitinsville, Mass.

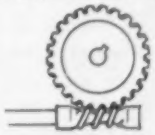
January 1961, thereby doubling the capacity of its production facilities. . . . **TENNESSEE EASTMAN CO., A DIVISION OF EASTMAN KODAK CO.**, Kingsport, Tenn.—Has begun the second phase in its multimillion-dollar construction program for Eastman's new polyester fiber, Kodel. . . . **UNION CARBIDE CHEMICALS CO.**, New York, N. Y.—Has appointed F. N. Wright and A. J. Lyon technical representatives to the Charlotte district sales office. J. W. Biddle has been named director of development with his headquarters continuing to be at the company's Technical Center in South Charleston, W. Va. . . . **WARNER ELECTRIC CO.**, St. Louis, Mo.—Has announced that production of standard fractional-horse-power motors is underway at its new 90,000-sq.-ft. manufacturing plant at Brinkley, Ark.


# Vital Tenter Frame Options *Feature* Marshall & Williams Engineering



These vital options include either bevel-gear or worm and wheel drive in units of 5 to 100 horsepower; frames from small tenterettes to large heavy duty tenters; rail widths in 7", 14", or 21" – a range which makes it possible for Marshall & Williams to engineer a tenter frame built for your job demands.





There is no "standard" Marshall & Williams model peddled to fit all situations. Each tenter frame must meet your special requirements for exacting performance and operating economies.

Wide options are also afforded in the extensive range of clips, jaws, and controllers to handle any type of fabric.

Whether your choice is a bevel-gear frame or one with worm and wheel, narrow or wide rails, etc. etc., you're assured of one consistent and exacting standard of excellence where trial-and-error has been eliminated by the longest and widest range of successful acquaintance with tentering problems.

375-O

M&W

**MARSHALL and WILLIAMS CORPORATION**

PROVIDENCE, R. I. — GREENVILLE, S. C.

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**DOUBLE RUB, FOUR BANK TAPE CONDENSER**

Built in 48", 60", 72" widths for adaptation to all carding machines. Write for information.

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*Engineers*
TEXTILE MILLS AND OTHER INDUSTRIAL PLANTS
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ELECTRICAL, STEAM, DIESEL AND HYDRAULIC ENGINEERING
MACHINERY REORGANIZATION
WATER SUPPLY
INVESTIGATIONS
REPORTS AND APPRAISALS
CONSTRUCTION SUPERVISION

CIRCLE 256 ON READER SERVICE CARD

**INDUSTRIAL ENGINEERS**

- MODERNIZATION PROGRAMS
- PLANT LAYOUTS
- COST SYSTEMS
- COST REDUCTION REPORTS
- WORK LOAD STUDIES
- MANAGEMENT PROBLEMS
- SPECIAL REPORTS

**RALPH E. LOPER CO.**
Greenville, S.C., Dial CEdar 2-3868 • Fall River, Mass., Dial OSborne 6-8261
Specializing in Textiles Since 1914

# TEXTILE WORLD... News About Men

GEORGE R. VILA has been elected president and chief operating officer of United States Rubber Co., New York, N. Y.

**Julius W. Abernethy** has resigned as president of Carolina Mills, Maiden, N. C., a position he held for 32 years. He will continue his association with the company as chairman of the board.

**J. Broke Adam** has been named assistant to E. G. Michaels, vice president in charge of production, Vanity Fair Mills, New York, N. Y.

**Loy H. Allen** has resigned as manager of the Guntersville plant, Boaz Spinning Mills, Inc., Boaz, Ala.

**Edward Bernat** has been appointed executive vice president of Garland Knitting Mills, Inc., New York, N. Y.

**Robert D. Bickford** has been placed in charge of all development work for Caron Spinning Co., Rochelle, Ill.

**Jack T. Blume** has been elected president and chief executive officer of Artloom Industries, Inc., division of Trans-United Industries, Inc., New York, N. Y.

**Paul Bowie** has been named manager of the Liberty plants of Woodside Mills, Inc., Greenville, S. C.

**Harold Brissey** has been named superintendent of the Liberty plants of Woodside Mills, Inc., Greenville, S. C.

**Donald E. Button** has been appointed plant manager of Troy Blanket Mills, Troy, N. H.

**J. M. Cheatham,** president of Dundee Mills, Inc., New York, N. Y., has been elected president of the American Cotton Manufacturers Institute, Inc.

**S. J. Craig, Jr.,** has been named plant manager of Excelsior Mills, Inc., in Pendleton, S. C.

**Robert M. Duncan** has been named plant engineer of Excelsior Mills, Inc., Pendleton, S. C.

**Kenneth Easdon** has resigned as general manager of Dartmouth Finishing Corp., New Bedford, Mass.

**William T. Eisen** has been appointed production superintendent at Hatch Mills, Columbus, N. C.

**Albert Fish** has joined the job-finishing department of Riegel Textile Sales Co., New York, N. Y.

**Coy J. Gray** has been appointed plant manager at McCormick Mill, a division of Excelsior Mills, Inc., Pendleton, S. C.

**A. W. Gunn,** associated for 24 years with Callaway Mills, LaGrange, Ga., in the capacities of vice president, secretary, and treasurer, has been appointed vice president in charge of financing of Abney Mills, Greenwood, S. C.

**Pratt Ellington** has been named general superintendent of Pacific Columbia Mills, New York, N. Y.

**Robert A. Greene** has been named superintendent of the Thatcher plant, Standard-Coosa-Thatcher Co., Chattanooga, Tenn.

**John D. Harris,** plant manager, has retired after 45-years service at the Manchester plant of Callaway Mills Co., LaGrange, Ga.

**Henry Hecht** has been appointed vice president in charge of marketing of Garland Knitting Mills, New York, N. Y.

O. LEONARD MORETZ, president and treasurer of Carolina Mills, Inc., Maiden, N. C., has been elected president of the Carded Yarn Association Inc., Charlotte, N. C.

DONALD R. JONAS has been elected president of the North Carolina Textile Manufacturers Association, Inc. He is executive vice president of Johnston Mills Co., Johnston, S. C.

**Dr. Gerald E. Herrnstadt** has been appointed chief product-development engineer and head of the Product Development Dept. of Callaway Mills Co., LaGrange, Ga.

**George L. Hodges, Jr.,** has been named superintendent of Climax Spinning Co., Belmont, N. C.

**Paul A. Koppe, Jr.,** has been appointed plant manager of Rockford Textile Mills, Inc., New York, N. Y.

**John A. Lunn** has retired as vice president and director of manufacturing of The Kendall Co., Boston, Mass.

**J. A. McKew** has been appointed superintendent of the textile mill in Cartersville, Ga., of Goodyear Tire & Rubber Co., Akron, Ohio.

**William J. Miles,** formerly with Dering Milliken Research Corp., Spartanburg, S. C., is now technical superintendent of weaving with Abbeville Mills Corp., Abbeville, S. C.

**Robert D. Reardon** has been named vice president, general sales manager, Beacon Mfg. Co., New York, N. Y.

**Charles Rosenberg** has resigned his position as treasurer and director of Plymouth Dyeing Co., Paterson, N. J.

**Henry Repokis** has been promoted to general manager of the worsted division, Excelsior Mills, Inc., Pendleton, S. C.

**Charles E. Rich** has been named Manchester plant manager, Callaway Mills Co., LaGrange, Ga.

**F. Fuller Ripley** has been

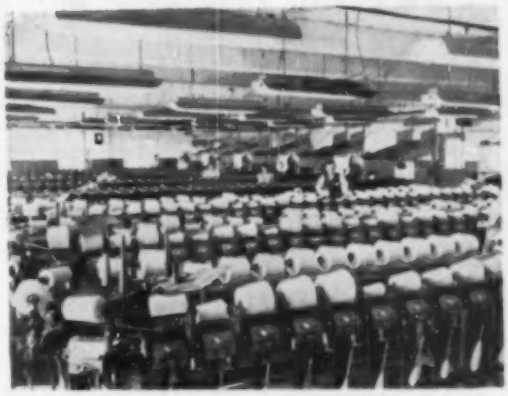
HOWARD SHAPIRO has joined Waumbec Mills, Inc., New York, N. Y., as director of Fabric and Product Development with responsibility for the development of apparel, decorative, and domestic materials.

WAYNE J. HOLMAN, JR., has been named vice president in charge of All-AMA Planning Council at the American Management Association's meeting. He is chairman of the board of Chicopee Mfg. Co., New Brunswick, N. J.


# ABBOTT MACHINE CO., Inc.

## WILTON, NEW HAMPSHIRE

***SOUTHERN SALES AND SERVICE: GREENVILLE, S. C.***



**AUTOMATIC CONE OR TUBE WINDERS**—for winding all types of spun yarns on cones or tubes for Warping, Dyeing, Twisting, Quilling, Knitting or Sales Packages.

**SPECIAL WINDING UNITS FOR KNITTING CONES**—include a new slub catcher and a new waxing attachment, which uses standard size commercial wax disks.

**LARGE PACKAGES**—can be wound up to 11½ inches in diameter for use on shuttleless looms and looms that require a cone supply.

**MODEL I AUTOMATIC QUILLER**—for coarse count cotton, worsted, wool and other spun yarns, delivers full loom bobbins automatically into boxes, onto pinboards, on wide belt conveyor for inspection of bobbins, or into specially made magazines for automatic loom feeder.

**MODEL II HIGH SPEED AUTOMATIC QUILLER** (10,000 R.P.M.)—for winding fine count cotton and synthetic yarns of either spun or filament construction.

Also delivers full looom bobbins automatically into boxes, onto pinboards or wide belt conveyor for inspection of bobbins.

Under some conditions one operator can run two or three machines and produce upwards of 2500 full loom bobbins per hour.

**ABBOTT FULLY AUTOMATIC RADIAL QUILLER, MODEL II**—especially designed for flexibility, is very versatile and particularly well adapted for winding numerous small lots of filling.

Winds coarse or fine count cotton, worsted, wool, rubber and various synthetic yarns, either spun or filament.

Automatic delivery of full loom bobbins onto pinboards, wide belt conveyor for inspection of bobbins, into baskets or other type containers.

Automatic delivery of bobbins can also be supplied whereby full loom bobbins from the individual cones and spindles are delivered into separate containers, which is highly desirable for loom finish yarns and the like.

The Radial Quiller can also be equipped with measured yardage attachments to give accurate, uniform bobbin yardage, as required for two-shuttle looms.

A wide range of spindle speeds for approximately 1000 R.P.M. to 10,000 R.P.M. is obtainable.

One operator can run several machines and thus produce up to 2000 loom bobbins, or more, per hour.




CIRCLE 163 ON READER SERVICE CARD 163

# TEXTILE WORLD'S

## 1961 FIBER-BLEND CHART

Interested in branching out? Looking for a new blend to help you smooth out your production schedule? Boost machine utilization? Increase profits?

Here's help—authoritative word on today's blends—in easy-to-read form that you can use to check your own blend techniques against recognized standards, or use in many other ways.

Information covers blends of polyester (Dacron, Fortrel, Kodel, Vycron), acrylic (Acrilan, Creslan, Orlon, and Zefran), rayon, acetate, and nylon fibers.

Includes useful information on warp, filling, finished weight, weave, type of loom, dyeing techniques, dyeing procedures.

You'll see the original on page 39 of this issue. You can get reprints of this valuable chart by writing

**TEXTILE WORLD**

**Reader Service Department**

**330 West 42nd Street**

**New York 36, New York**

**Prices: 1-25, $1 each; 26 to 50, 75¢ each; over 50, 60¢.**

HENRY F. MORRIS has assumed duties as manager of Karastan Spinning Div., Fieldcrest Mills, Inc., New York, N. Y.

named to the newly created post of executive vice president of Troy Blanket Mills, Troy, N. H.

**Harold B. Risher** has been named vice president and general manager of Abbeville Mills Corp., Abbeville, S. C., and general manager of Laurens Mills, Laurens, S. C.

**Paul A. Rogers** has been promoted to manager of Pacific Columbia Mills, Inc., New York, N. Y.

**Edward J. Russell** has resigned as vice president of manufacturing of Troy Blanket Mills, Troy, N. H., after 40-years service with the firm.

**Jacques Schloss** has been employed as assistant to the president of Cone Mills Corp., Greensboro, N. C. In his new capacity he has responsibility for coordinating the production and merchandising of new products.

**Seabury Stanton,** president of Berkshire Hathaway, Inc., New Bedford, Mass., has been re-elected chairman of the Northern Textile Association.

**Joseph W. Thatcher** has been named manager of the spinning division, Standard-Coosa-Thatcher Co., Chattanooga, Tenn.

**Charles Voss** has been appointed superintendent of the Standard plant, Standard-Coosa-Thatcher Co., Chattanooga, Tenn.

**Charles E. Walters** has resigned as vice president and director of Abney Mills, Greenwood, S. C.

**Fred Weir, Jr.,** has been named assistant to the manager at Pelzer Mills, division of The Kendall Co., Boston, Mass.

**C. Clyde Williams** has resigned as general manager of the Boaz and Guntersville plants of Boaz Spinning Mills, Inc., Boaz, Ala.

**Jules Witten** has been elected president of American & Efird Mills, Inc., New York, N. Y.

## OBITUARIES

**R. O. Cobb,** 60, retired superintendent of the former Lafayette Cotton Mills, Lafayette, Ga.

**Nathan Goldman,** 58, foreman, Penn Lyn Knitting Mills, Philadelphia, Pa.

**Herbert Grandage,** 69, former president, Spool Cotton Co., now known as Coats & Clarks Sales Corp., New York, N. Y.

**Nolen L. Hussey,** 56, former director, Kenyon Piece Dyeworks, Inc., New York, N. Y.

**Arthur Kirsinger,** 63, salesman, Allied Textile Printers, Inc., New York, N. Y.

**Joseph Leaderman,** 78, chairman of the board, Rockland Bleach & Dye Works Co., New York, N. Y.

**Roger McCallum,** 60, personnel director, Lyman Printing & Finishing Co., affiliate of M. Lowenstein & Sons, New York, N. Y.

**Garrett Morehead,** 54, Leaksville Woolen Mills, Inc., Charlotte, N. C.

**John J. Prendergast,** 62, connected for 27 years with W. H. Prendergast Mills (now defunct), Bridgeton, R. I.

**Paul Warley,** formerly associated with The Kendall Co., Boston, Mass.

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Chief mechanical design engineer familiar with textile fiber machinery particularly roving and spinning. Qualified for full responsibility for original designing and product engineering. Location in Rhode Island until summer 1961. Thereafter in Charlotte, N. C. area. Apply in writing giving experience and qualifications to Robert Rulon Miller, President, Dixon Corporation, Bristol, R. I. Applicant's confidence will be respected.

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**Textile Graduate, age 34, speaking Spanish,** Portuguese and French. Experienced in carding, weaving, and spinning cotton, synthetics, wool and blends. Desires position in Latin America or Europe as asst. supt. or supt. Now employed as fabric development engineer of industrial fabrics. Will consider sales of textile machinery. PW-5699, Textile World.

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1—Gas Fired Tenter Finishing Range—Age 1954: Hunter 20 ton Padder 66", M & W H-Speed Tenter Frame 60', Hunter Housing 45', Simpson Batcher, AV Motor Generator
1—Continous Stainless Rope Bleach Range—Age 1954: Wiesner-Rapp 24" Saturator, Becco 1500 yd. J-Box
1—Morrison Continuous Open Width Dye Range 60", Age 1948, 2 Williams Units, 3 Wash Units, Pneu. Padder—15 ton, Vacuum Extractor, M.G. Set
1—Werner Hydraulic Schreiner Calender, 47" face, 50 ton, 20 HP motor, Age 1954
2—Proctor & Schwartz Loop Dryers, 60' long, steam heated, 1—126" sticks, 1—102" sticks—Age 1948
1—Andrews & Goodrich Air Lay Dryer, 54' long, 64" conveyor, elec. eye, Motor Generator Unit
3—Rodney Hunt Stainless Encl. Dye Boxes, 16' wide, 47" deep
2—Van Doorner Stainless Encl. Dye Boxes, 12' wide, 42" deep
2—Rodney Hunt Stainless Encl. Dye Boxes, 10' wide, 47" deep
1—Rodney Hunt Stainless Encl. Dye Box, 2' wide, 42" dp.
2—Rodney Hunt Stainless Encl. Slack Rope Washers, 10' wide, 42" dp, Pneu. Squeezers 120"—1948
1—American Laundry Cloth Press
1—Winsor & Jerauld Tenter Frame, 30' long, 72" wide, motor
1—Rodney Hunt Dye Machine, 40" Pneu. Squeezers,—Age 1956
1—Morrison Micro-Set Padder, 60" wide, 2 rolls, 8 ton, D.C. Motor
1—Van Vlaanderen 3 roll Calender, 60" wide, lever set
2—Smith Drum Stainless Package Dye Machines, 500 lb. each—1949
1—Obermier Stainless Package Dye Machine—300 lb.
2—Proctor & Schwartz 6 Drawer Tray Dryers
16—Stainless Steel Dye House Trucks, 60" long
1—MacBeth Examining Light and Booth
3—Werner Stainless Encl. 70" Dye Jiggs
1—Rodney Hunt Stainless 80" Open Width Washers, 2 compts.
1—Meadows Hyd. Embossing Calender, 72" wide, 2 rolls, 25 ton—Age 1949
1—Butterworth 8' Dye Kettle, Stainless Encl. 58" deep, motor
12—C & K W3 Convert. Looms, 64" wide, motor
12—C & K W3 Convert. Looms, 82" wide, motor
70—C & K S6 Looms, 2x1 box, 58" wide, Age 1951
26—C & K S6 Looms, 4x1 box, 54" wide, Age 1948
1—Reiner Hi-Speed Warper, 54¼" model BW, 440 end mag. creel
1—Abbott Paper Cone Winder, Model #65, 100 spdls., 8" 4' cone—Age 1948
1—Barber-Colman Portable Tying-In Machine, Model LC—Age 1951
1—Barber-Colman Portable Tying-In Machine, Model LL, motor —Age 1951
1—Cocker Hi-Speed Warper, 54¼" wide, 480 end mag. creel, 5 HP motor
1—Rebeamer & Dry Slasher, 110" headway, D.C. Generator, 7½ HP
4—Power Inspection Tables, 80" wide, 3 HP gear motor

64—Warner-Swasey "Sulzer" Automatic Shuttleless Looms, 80" wide, 40 Looms—Standard 8 harness, 24 Looms—Staubli Heads 25 harness, Age 1950–3

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1—8' Blickman enclosed dye beck
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2—VV—60" Tensionless Tubers
1—Progressive 64" Examiner w/trumeter
2—VV beamers—50"—60"
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1—Vertical Set 18-130" SS cans 35 lb
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**1—C. & M. 48" Vertical Brusher**
**4—Abbott 100 Spindle Auto. Quillers**
**2—Abbott #64 Cone Winders**

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3—40 gauge 10 bar 6 leaded
1—139" 36 gauge 6 bar 6 leaded

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36—Whitin F2 Spinning Frames, 3½" ga. super draft
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10—New Whitin model N Spinning Frames

### THROWING & PREPARATORY

12—Atwood Redraw Machines, 1950, 68 spindles
56—Universal #10 Uptwisters, 184 spdls. 2 lbs. headless package, 1950
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1—Johnson 7 can Slasher, 1949
1—Uxbridge Gentle Air Slasher
3—Abbott Quillers, 120 spdls. 1955, Pin Boards
208—Spindles Whitin Schweiter Quillers, Motor Drive
4—Barber-Colman Spoolers, 306, 252, 162 pockets
2—Abbott model 64 Cone Winders, 100 spdls. each

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14—Draper D Looms 66" cam type, Motor Drive
33—C & K C2 Looms 40"
800—Draper K Looms, cam, 47" Reed, Motors
3—Barber-Colman Portable Tying-In Machines, 1949
24—Draper X2 Looms 40"

### DYEING AND FINISHING

1—Cocker Indigo Dye Range, '48
1—Rodney Hunt Stainless Open Width Washer, 80", 2 comp.
4—Venango S.S. Package Dye Unit, 1948, 3—500 lbs. 1—250 lbs.
4—Blickman Totally Enclosed S.S. Dye Boxes, 2-12', 2-8'
44—S.S. Dry Cans 142x23" dia.
4—S.S. Dry Cans, 66"—50 lb. pressure
61—Norton S.S. Dry Cans 48"x 23" dia. Motor & Drive
28—Montford Double Acting Nappers, Motor & Drive
1—Parks & Woolson Hi-Speed Davidson Shear 66½", 1947
1—P & S Cure Dryer 25', gas fired, 1954
1—Rice, Barton & Fales 8 color Print Machine 52"
200—Copper Print Rollers

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1—CENT. EXTRACTOR, Fletcher, Tinned Copper Basket 38" dia., Safety C.
1—NAPPER GRINDER, D&F., (Universal), 98", Surface, Side Grinding Wheel.
1—Pr. AIR GUIDERS, Guider Spec. Co., mtd. on adj. stand, 76" Max. W.
1—PIECE DYE KETTLE, R. Hunt (Trushade), S.S., 7', 8 String, Type M.
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1—MEAS. & INSPECT. Machine, Measuregraph, 64", tube/tube, V-S Drive.
1—MEAS. & ROLLING Mach., P&W., "AWC" Model, 80" 100-Yd. dial, Batcher.
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1—KNITGOODS NAPPER, D&F., 90", 20 Gear Driven Rolls, V-Belt Motor Drive.
1—MIXING PICKER, C&M., Atlas #1, 40", 12 Bar, B.B. Cyl., Feed Table, M.D.
1—MIXING PICKER, D&F., 60", Model 32, 6 Bar, Feed Table, Steel Bonnet.
1—PICKER, Dewsberry, 24", 12 Bar, B.B., Feed Table, Canvas Apron.
1—RAG PICKER, Dodge, B.B. Cyl. 30" dia. x 30", Steel faced lags, Feed T.
1—SHREDDING PICKER, D&F (Dreadnaught), 48", 12 Bar, Ball Bearing.
1—SQUEEZE SET, R. Hunt, 2 Rubber Rolls, 80" F. x 15" dia., Motor, Reducer.
1—SINGLE SHEAR, C&M., 66", Wire Raising Brush, Folder Scray.
1—ROTARY SLITTER, P&S., 84" Roll, with three 9" dia. Cutters.
1—TENTER FRAME, Renshaw, Over/Under, 60"x30' long, Folder, V-S Drive.
1—TENTER FRAME, Clip type, 53" x 20' long, Air Guiders, Batcher, M.D.
1—TUBER, V.V., 65", for winding tube to tube, 4 Fig. Counter, M.D.
1—TUMBLE WASHER, Smith-Drum, 2 Pocket, Monel Cyl. 54" x 36" dia., M.D.

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1—TWIST TESTER, Suter, Precision, 30" Model.

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*PARTIAL LIST*

2—72" x 100' Enclosed Tenter Ranges, steam and gas heated, with M.G. Sets, etc.
1—72" 4 Compartment Tensistrol Washer, M.G. Set, etc.
1—60" Benninger Pressure Jigg.
18—50", 60", 70" Enclosed and Open Stainless Steel Dye Jiggs.
16—8' to 20' Enclosed and Open Stainless Steel Dye Becks.
1—P. & S. 72" Loop Curer, steam and gas, 300 yard capacity.
1—10 Fan Loop Dryer, 104" revolving poles.
4—Tenter Frames, 60" to 70" widths, 20' to 40' lengths.
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1—50" 20 ton Pneumatic Embossing Calender, spare rolls.
2—74" Emco Batchers, rotary knives.
2—Semi Decators, 50"—60" widths.
1—3 Roll 65" Pneumatic Padder.
2—60" Pneumatic Quetches.
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**10—Print Machines, 6 to 10 colors, 40" to 64" widths**

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CIRCLE 410 ON READER SERVICE CARD

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1—Whitin 3 cyl. 60" x 60" Woolen Card, Year 1947, T-Slot, Peralta, Double Rubb tape, M.D.

6—Draper 50" X-2 Looms, 1950
2—Cloth Numbering Machines
3—Foot Power Sewing Machines
20—D & B 40" Cotton Cards
26—C&K 56" S.3 looms, M.D., W/Dobby
1—P & W 3-blade Shear Complete
1—Barber Colman 56" LL Knotter
1—Knowles, 1953, Drum Type H.S. Dresser W/Creel, 96"
1—Set W&S Pin Drafters with Creels
1—P & W 72" x 36" Semi Decater, 1947
2—Collins Fancy Twisters, 200 spdls.
2—Scutchers 72" and 78" complete Nash Pumps sizes, 1-2-3-4-5-6
2—Whitin "B" Fancy Twisters, 4" gauge, 200 spindles, M.D.
2—Tolhurst 60" S.S. Extractors
1—Gessner Vacuum Extractor, Folder, 78", Adjustable, M.D.
1—Terrell Bobbin stripper, M.D.
4—Foster 102 Cone Winders
1—Hermas 4 Blade Vertical Shear 58"
1—D & F Fearnaught Picker with feed
1—H & W yarn conditioning oven
2—Hunter Fulling Mills 26E
1—Smith Drum 100 arm S.S. skein dye
1—Sample Skein Dryer
1—Schofield Picker 42" Wide, 32" Dia., BB, 1950, M.D.
1—P & S Ceiling Condenser
2—Hussong S.S. stock & skein dye
1—American Laundry Washer
Stainless Steel Tanks, all sizes
1—Abbott 80 spindle Quiller
1—H & T Water Softening Unit
1—D & F 48" Mixing Picker 6 Bar

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CIRCLE 411 ON READER SERVICE CARD

# LIQUIDATING

## MODERN JIGG & BOX PLANT of Modern Central Dyers & Finishers Inc.

101 E. 23rd St., Paterson, N. J.

8 VV 60" Model 720 Dye Jiggs with covers.
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1 Morrison Heat Setting unit
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consisting of:

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3—Foster 101 Winders, 100 spindles each. 1 for cones, 1 for springs, and 1 for dyetex tubes.
2—Gas Dryers

**ANOTHER COMPLETE UNIT**

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Like New

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6—U. S. HDless Pkg. Twisters
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1—Franklin Stainless Steel 30 pound Pressure Package Dyeing machine complete with Pump, Etc.
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2—Stainless R&L 72" Wide Piece-Dye Kettles, Hump Reels, motor Drive, Automatic knock-off Device. Each kettle equipped with Johnson Pneumatic Dye Cycle Control. Compresser for the above controls is available.
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1—French N.S.C. 3 Head Gill—Motor Driven
8—French Combs
1—Barker Double Head Baller with motor Driven Creel
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24—Crompton & Knowles W-3 Automatic Convertible Looms 82" Reed Space, 25 Harness, High Cloth Roll, Warm Take Up, Electric Warp Stop Motion with Drop Wires, 1½ Beams per loom. All motor driven through 1½ HP Motors 3/550/60. Looms in excellent condition.
1—Toledo Auto-Gauge Cloth Scale—with platform
1—Parks & Woolson Weave Room Perch with Productimotor
2—Davis & Furber 96" Wide Pinless Dressing Reels with Creels, Hackstands, Boomers and Compressor.
2—Whitin-Schweiter MS—24 Heads Motor Driven
2—Whitin Schweiter MS—30 Heads Motor Driven
2—Rotary Motor Driven Bobbin Strippers 40,000—Loom 8¾" Bobbins
75—Fluorescent Lights 48"—2 Tube
1—H&W Yarn Conditioner, Type ST-2, No. 347-F0807, Inside Measurements 74" Wide X 54" High X 54" Deep, 2-Door and complete with controls
1—Birch Brothers late Type Tacking machine
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1—Davis & Furber 48" Fournaught Picker
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1—New Stainless Steel Carrier for Scribner 500 pound Stock Dye Kettle
2—Davis & Furber 3 Cylinder 48" Wide x 60" Diameter All Iron 3 Cylinder Card, complete with Breasts, 88 Int. Feed, Peraltas, D&F Double Rub Tape Condensers—96 Ends.
1—Peralta 72"
2—Bramwell 60" Card Feeds with late type weigh pans and bottom apron
2—Proctor & Schwartz No. 535 Motor Driven 48" Card Feeds
1—Set D&F Deviding Rolls 72 Ends—48"
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10,000 Bobbins for Model BB Twister—Whitin
10,000 bobbins for Model B Twister—Whitin
10,000 Model E. Spinning Frame Bobbins
16—W-2 Looms 82" R.S. motor Driven Hi Cloth Roll Take Up—4 x 1
12—C&K 48" Sample Looms 4 x 4
1000—Loom Harnesses for W-3 Looms 82"
50—Loom Beams for 82" Looms & 30 Beams for 92" Looms
100—Pairs 30" Beam Flanges
1—82" Heavy Duty D&F Pinless Dressing Reel
1—New Hack Stand with Yardage Counter and Electric Stop Motion. Large Quantity of Drop Wires, Pick Gears, etc.
2—Riggs & Lombard No. 65 Fulling Mills, Stainless Steel, Guides, throats, Stuffing Boxes, traps, Bottom stainless Steel lined, Rubber Sectional Rolls and motor driven.
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8—Terrell Quill strippers, Models R, L
1—Eastwood selvage spooler
4—Terrell Roving bobbin strippers
10—Diehl Transmitters, 1 HP/550V for XD looms
1—700 end Ribp Eastwood Warper Creel
1—350 end Universal creel
1—Small hand paper baling press
1—Shawmut road cleaning machine
1—Cloth trimmer, 72", Kaumagraph attachment
20—Cloth inspecting machines, all styles
1—Uster warp frame, 100", for tying machine
4—48" Dye Jigs, S.S., tandem
6—40 & 80 gal. S.S. jacketed kettles
3—Haskell-Dawes 3 formers, 12x72", 1956
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1—Haskell-Dawes backstand
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200—11 x 14 spools on bobbins
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1—RB&F 44" 5 color print machine.
1—Hinnekins Moire Calender 50" New.
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1—40" x 54" Winser & Jerauld Tenter Fame #7 High Speed Chain.
1—72" 2 Roll Simpson Cut Off Winder.
2—96" x 50" Winser & Jerauld Swing Tenters, #5 Stainless Steel Clips.
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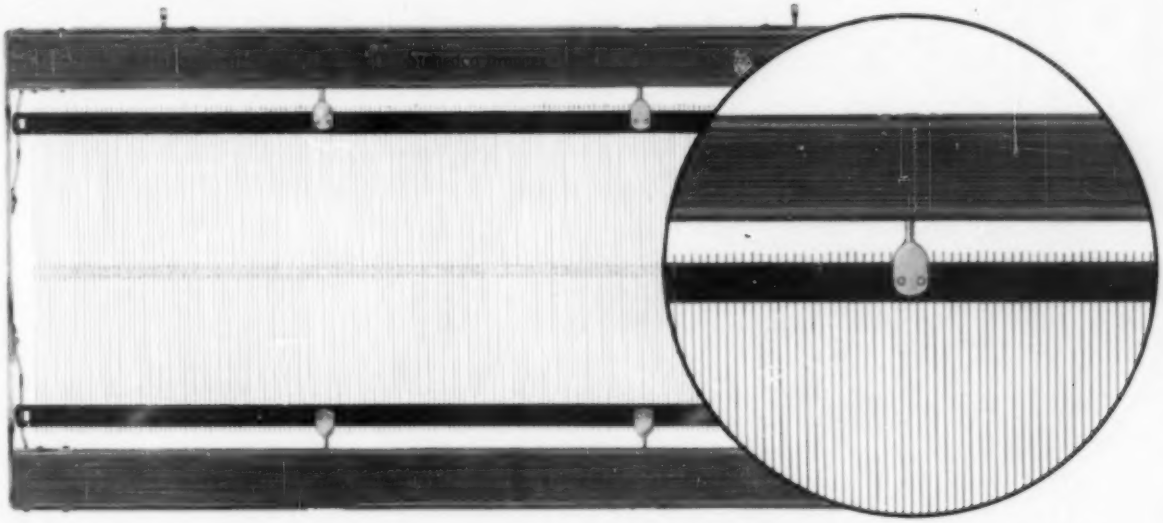

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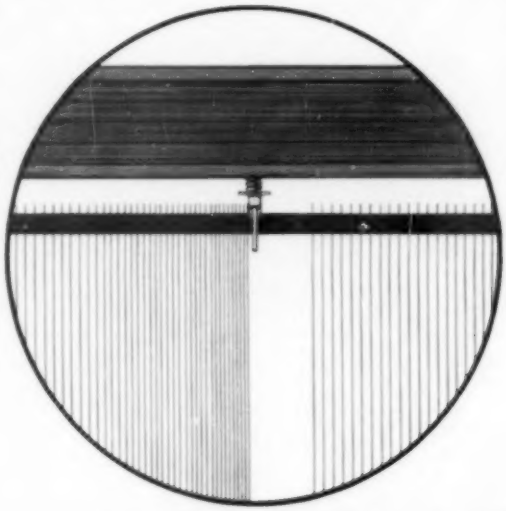

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